COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper – Second-class postage paid at Chicago, Illinois

Vol. V No. 39 | September 29, 1971 | Price: $9/year

Confusion Clouds Software Support

Users Losers as RCA Drops Computer Division

By Michael Merritt
Of the CW Staff

After months of rumors, RCA's Sept. 17 announcement that it had decided to get out of the computer mainframe business was not a complete surprise.

But the fact that RCA made the announcement before knowing how or when it would carry out the decision upset a lot of people – especially the RCA users.

RCA has pledged to meet "contractural commitments," but no one in the corporation seems to know how this will be accomplished.

The Computer Systems Division is for sale, but since there were no takers in negotiations which almost certainly took place before the announcement, there is considerable doubt that there will be any buyers now – at least any buyers willing to pay RCA's price.

Looking back to last Spring Joint, RCA was the only company to display an operating mainframe – now known as the RCA White Elephant – formally known as the RCA 3 with virtual memory.

Related stories appear on pages 10, 33, and 34.

Most users were called on early last week by their sales reps. Users weren't able to extract much information from them though, since the reps seem to be as much in the dark as anyone.

Maintenance Assured

Hardware maintenance seems to be assured through the RCA Service Co., but continuing support of existing software is an open question. New software releases – revisions of operating systems or whole new packages – seem unlikely.

Some clarification began to dribble out of New York, last week, though. RCA said it won't cancel existing leases, and users with equipment on order can expect delivery; there have been rumors, though, that RCA will try to talk its customers out of as many deliveries as possible.

In line with this, the first people to be fired from the computer division were production workers, 2,668 of them. Then 800 more were furloughed until Sept. 30.

Guaranteed conversion contracts – RCA's pledge to move users off IBM processors and onto RCA units as smoothly as possible – will remain in force, RCA corporate offices said. Industry sources feel, though, that there weren't many guaranteed conversion contracts signed.

RCA users contacted by CW said they had been visited by competitor's salesmen – especially IBM's. The users, though, weren't overreacting. They were waiting patiently for RCA to clarify their future support policies before deciding whether to ditch their RCA processors.

DP managers who had decided to leave IBM's sheltering arms for RCA were waiting for some help in defending their decision; owners of RCA computers were watching the bottom drop out of an already weak used RCA computer market; renters were contemplating the unpleasant prospect of converting their operations. RCA's DP employees were looking for jobs. Nobody was happy except RCA shareholders and IBM.

Rumors, Rumors Everywhere

While Marlboro may not be much of a computer factory any more, it has become one of the world's great rumor mills. The current scuttlebutt is that professional staff will be kept on the payroll at least until the end of October. The reason for this is to enable management to sell off the division in an on-going shape.

This may mean as well that RCA users have one more month to obtain as much software and systems support as they can – before the balloon goes up.

RCA customers after that may well have to content themselves that, in the words of one user, "what you've got is what you're going to get."

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Users Set Emergency Meeting

The next national meeting of the RCA Computer Users Association is scheduled for October 24-27 in San Francisco.

Herb Rothstein, vice-president for special interest groups of the association, said there will be an emergency board meeting of the group once RCA clarifies its support ground rules – probably this week.

Association President David L. Rau said "I'm sorry for the users in virtual memory; there are a lot of problems to be fixed and corrections to be made, and they may never be cleaned up." He added that most of the RCA users he had talked to are "holding their breath, waiting for the other shoe to drop."

RCA users who want to attend the meeting or join the group should contact E. E. Andrew, RCA CSD Guest Relations, Building 202-1, Cherry Hill, Camden, N.J. 08101.

Independent Agency Advocated To Control Rap Sheet Banks

By Edward J. Bride
Of the CW Staff
Fourth in a Series

INDIANAPOLIS, Ind. – If one agency is going to computerize a person's criminal history, it should be "an independent agency, not the police, not the department of corrections, and not the courts," according to an official of the Indiana Department of Corrections.

An "overall agency" is needed for this type of record system, said Dr. Jeffrey Schrink, director of research, because "that's the only way" the interests of all three users can be met.

Schrink's proposal is not unlike the "fourth branch of the government" once proposed by Dr. H.R.J. Grosch of the National Bureau of Standards.

Spotlight Report

Grosch contended that only by removing authority to create and maintain personal data banks from the executive, legislative, and judicial branches could data collection and protection be carried out effectively.

Nor is Schrink's idea completely removed from the ombudsman program launched by several computer societies [CW, April 21]. Under this program, when a citizen feels he has been wronged by a computer, DP experts are called upon to investigate and correct any misinformation.

Schrink's independent agency could be a combination of both these ideas. It would serve as a substitute, or at least a monitor, for the several separate agencies that are compiling histories of criminals and juvenile offenders,

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But Still No Jobs

Welfare Moms OK DP Workers

By Joseph Hanlon
Of the CW Staff

ATLANTA, Ga. – Getting welfare mothers off the dole and into jobs has become, like fresh air and apple pie, something that all politicians feel safe supporting. But can it really be done?

An experimental program here showed that while it is possible to train the disadvantaged as computer operators, there are problems – the most serious of which is getting jobs after the course is over.

Honeywell Institute of Information, which normally trains computer programmers, has set up a special course for operators in cooperation with the Georgia Departmemt of Labor and the Atlanta Model Cities Program.

The first class, which finished a month ago, trained mothers and two teenagers from the Model Cities area, as well as six regular students.

No Jobs Yet

As yet, none of the five has found a job. Honeywell Institute Manager Ron S. Kurtzer remains optimistic that they can be placed as operators, junior operators, or tape librarians.

But there are problems. One welfare mother was offered a third shift job, not uncommon in the industry, which she could not take. Another student was offered a job that he could not accept because there was no public transportation.

Still another problem is buck-passing. The government agencies expect Honeywell to find the students jobs, and the students expect Honeywell to find the jobs, while Honeywell

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'Unexplained' DP Development Delays Cost County

By Edward J. Bride
Of the CW Staff

JACKSONVILLE, Fla. – Unexplained delays in computerizing a property inventory system may be costing Duval County up to $5 million a year, local sources have claimed.

It has been estimated that such a system would add $1 billion to the tax rolls over the next five years, at which time tax revenues would have increased by $25 million. Officials noted that some of this tax-base increase would come from new buildings, but most would be comprised of updated tax valuations which reflect current market prices.

"You can't do it manually today," said Dave Fender, chief clerk in the Assessor's Office, who added "we're losing money every day" that the system is not computerized.

At issue is the automatic analysis and listing of every square foot of property, Fender said. When land parcels or buildings are sold, the actual sale price would be recorded in the data base. The program would revaluate "neighborhoods" when prices are preponderantly higher – or lower – thus automatically changing the tax rate, Fender told CW last week.

Part of the delays stem from a decision on whether to develop such a system in-house, or to award a development contract to an outside firm which might charge up to $500,000, Fender reported. There is a possibility such a "package" already exists and, "if someone has a package today, we want it," he added.

Assessor Robert Mallard has estimated it would take two years to develop the system in the consolidated city's data processing division, an estimate which has not been disputed. The problem, apparently, is getting the work started.

Old Topic

Automatic revaluation has been discussed since the Jacksonville government was consolidated into the county system three years ago. Since that time, the city's DP department has experienced a plethora of problems, including inadequate environment, lack of internal controls, and insufficient funding.

Fender indicated all these problems were part of the delay, which now includes evaluating proposals from at least three consulting companies interested in automating the property records.

Tax billing has been computerized, according to Fender. However, there is no procedure for on-line maintenance of the tax base, one of the goals of the current controversy.

If the system were developed in-house, it might cost only around $100,000, Fender agreed. The problem is the timing, and the fact that an existing package could begin generating revenue immediately, instead of two years from now.

Ryan Says DP 'Just as Exciting' As Old Days on the Gridiron

By Alan Drattell
CW Washington Bureau

WASHINGTON, D.C. – Ex-football star Frank Ryan, quarterbacking computerization at the House of Representatives these days, says after the first three full-time months on the job that he finds his work in Congress "just as exciting" as his years spent on the gridiron.

Ryan, who moved into the appointive post as director of information systems with the House Administration Committee last July 1, is aiding in the design, purchase and installation of computer systems and the coordination of EDP activities for the House.

He has already identified four major areas needing automation: voting, mail, retrieval of texts, and classification of budgetary and fiscal information.

In the area of voting, Ryan said, "We are already pushing ahead with design of a display/retrieval system by Informatics. We're currently negotiating a contract with them that will be in the neighborhood of $1 million."

The Informatics system would enable the House to handle voting and quorum calls on the floor.

Second is the mail. Ryan's small staff, currently numbering five including himself, is studying the problem. "Two hundred million pieces of mail are sent out each year by congressmen," he added.

A third need is the retrieval of texts from congressional bills, to give congressional staffs particularly "a quick recall" of legislation in the hopper.

And finally, there is the need to classify all budgetary and fiscal information for congressional use.

In the politically sensitive milieu of Capitol Hill, Ryan seems to be winning points in general for his effectiveness and for his dedication to the job.

John Walker, staff director of the House Administration Committee, extoled the ex-football star's work, explaining that he translates computerese into a language that the Congress can understand. "He's doing a great job working out the nuts and bolts of things."

Walker emphasized that Rep. Wayne L. Hays (D-Ohio), chairman of the Administration unit, was particularly pleased with Ryan's work.

For one thing, his pace in computerizing the House has been slow and measured. "There are natural reservations about a new system," Ryan said. "Congressmen must be convinced that automation is the better way to do things."

There are some problems areas, of course, and one could involve a dilemma familiar to many computer users: duplication.

The former all-pro quarterback admitted that he had been contacted by his former employer, the Washington Redskins, to play ball this year. Sonny Jurgensen, the team's first string quarterback, was injured seriously in a pre-season game.

But, said Ryan, "I'm a little bit happier working in Congress than I could ever be in football. There's more of a future here."

"Frank's in the big leagues up here," chimed in Walker.

Delaware Designing To Cut Crime Rate

CW Washington Bureau

WASHINGTON, D.C. – Delaware is developing a systems analysis approach to crime reduction, Gov. Russell W. Peterson of Delaware recently told the Subcommittee on Legal and Monetary Affairs of the House Committee on Government Operations.

"We have systems analysts working not only with traditional law enforcement agencies, but with all groups – state and local – whose programs or activities may affect the rate of crime," the governor said.

"Our objective is to develop a system design encompassing all the known variables bearing on the rate of crime and to employ that unified system in accomplishment of our overall goal of reducing and preventing crime."

Peterson said the program would not have been possible without the funds granted for the program by the Law Enforcement Assistance Administration (LEAA). His remarks came at a hearing concerning LEAA and the bloc grant concept as embodied in the Omnibus Crime Control and Safe Streets Act of 1968.

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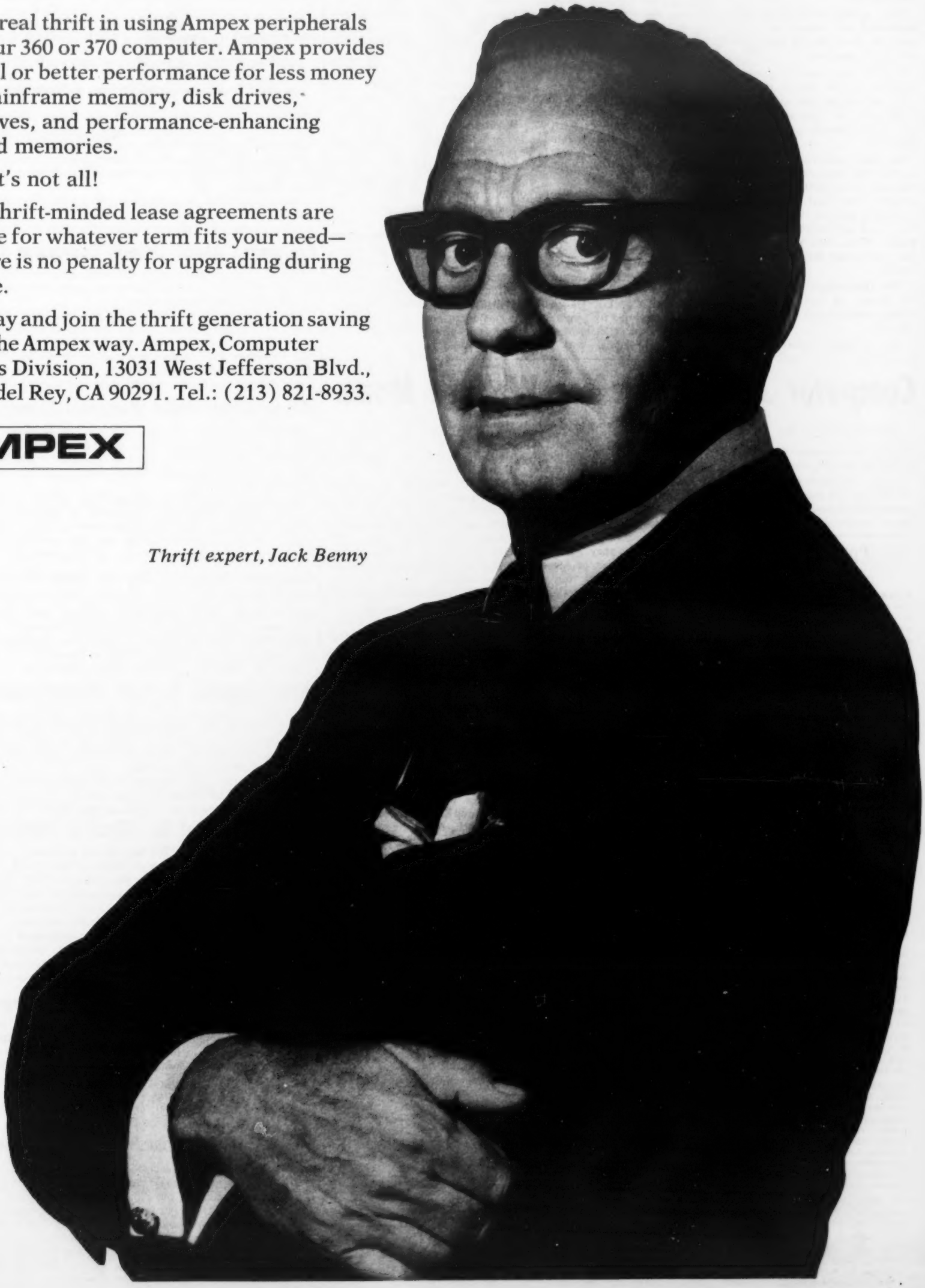

Thrift expert, Jack Benny

Crime File Agency Advocated

(Continued from Page 1)

for immediate or potential computerization.

Each agency starts from the beginning and serves its own purposes, he indicated, and there is little cooperation.

Schrink is not certain computerization is the answer to society's ills, but he also doubts the adequacy of many of the planned or already implemented systems.

His main concern, apparently, is that the most comprehensive files are being built by the FBI, which spends "little time on the corrective process. They just say 'admitted and released' or 'paroled.' That doesn't help us in the corrections department very much.

"We think there's more going on inside an institution than being admitted and released," he added.

The Indiana Department of Corrections is not being kept informed about the progress of the FBI's National Criminal History System (NCHS), he said, although the directors of Project Search, the original system planned by the Law Enforcement Assistance Administration, did keep his agency up to date on developments.

The FBI, he observed, is much more concerned with the police side of the files.

"I just think it's impossible for an agency to be aware of the concerns of another agency. I don't think we could create the files and not let our own interests creep into it. I don't think the police could do it, either."

In one county, the courts have joined the list of agencies creating computerized files. The Wayne County Circuit Court and Department of Probations have developed a comprehensive system, scheduled for implementation as soon as the forms are printed, and under the plan, progress of juveniles through the legal system will be followed.

The complete files at the county probation offices will be manual, said Chief Probation Officer Mrs. Kay Wilson. Statistics will be updated and records processed at the computer center at Ball State University in Muncie, at the request of the judges.

The original intent of this system was to help the judges ascertain the fairness and effectiveness of their decisions and sentences.

When a juvenile is sent to a reformatory, however, his complete record, in computer format, will accompany him, ready for computerization if and when state officials decide this aspect of the rehabilitation procedure should join NCHS.

Under FBI guidelines, juvenile offenses may be precluded from NCHS, but this can be waived if a major offense is at question and the youth is tried as an adult.

Computer Jobs Scarce for Welfare Moms

(Continued from Page 1)

expects the students to do most of the job hunting themselves.

People connected with the course told CW they had found a person who is young and has few home responsibilities is most likely to be successful in the program.

Welfare mothers, in particular, have difficulty because of duties at home – "they have a lot on their minds." Further, they don't have as much time to study at night because of the children.

Nevertheless, they stressed, welfare mothers can be successful in the program if they are highly motivated and talented and if the children are adequately cared for during the day.

Seven Week Course

The seven week course consisted of five-hour classes five days a week at Atlanta Baptist College, where the Honeywell Institute has a computer.

Students sent by the Labor Department and Model Cities received an average of $44 per week while attending the course.

Labor and Model Cities officials are pleased with the course, and it will be given at least once more, starting this month. "Its obvious from talking to the people that they learned a lot. They are well pleased and confident," commented one official. But can they get jobs is still a question to be answered.

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THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
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EDITORIAL OFFICES: 797 Washington St., Newton, Mass. 02160 (617-332-5606; TWX 710-335-6635). Washington: 1651 Winding Way Lane, Wheaton, Md. 20902 (301-942-4404). Europe: Computerworld, c/o IDC Europa Ltd., 59 Grays Inn Rd., London, W.C.1, England (01-242-8908).

Second-class postage paid at Chicago, Ill. Published weekly (except: a single combined issue for the last week in December and first week in January) by Computerworld, Inc., 25 E. Chestnut St., Chicago, Ill. 60611. © 1971 by Computerworld, Inc.

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25 cents a copy; $9 a year, $16 two years, $20 three years in U.S. Add $1 per year for Canada. Other foreign rates on request. MARGARET PHELAN, circulation manager. Four weeks' notice required for change of address. Address all subscription correspondence to circulation manager, Computerworld, 797 Washington St., Newton, Mass. 02160.

W. WALTER BOYD, *publication manager.* PATRICK J. McGOVERN, *publisher.*

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POSTMASTER: Send Form 3579 (Change of Address) to Computerworld Circulation Dept., 797 Washington St., Newton, Mass. 02160.

St. Louis Blues, Flyers, Maple Leafs Plan DP System for Puck Pushers

PALO ALTO, Calif. – Football and basketball teams have long used computerized scouting methods to better their assortment of players. Now, hockey follows.

Three teams in the National Hockey League have asked a local company to develop selection systems for the hockey draft.

The Philadelphia Flyers, the St. Louis Blues, and the Toronto Maple Leafs have asked Optimum Systems Inc. (OSI) to analyze the available data used in picking amateur players in the new "universal draft." "Our system will not tell clubs what to do," said OSI executive Dr. Atam Lalchandani, "but it is going to produce better assessments."

New scouting forms and procedures will be established for obtaining concise information on both collegiate and other amateur prospects, who used to be drafted in two separate sessions.

Under OSI's system, the combined data will be computer-processed to provide rankings of all draft prospects.

Lalchandani said the company would develop a unique system for each club, to reflect their concept of the "perfect player," and each club will receive different rankings of draft choices.

One team may stress strength in potential players, he explained, while another may seek skating ability or aggressiveness.

RCA Quits the Mainframe Business

(Continued from Page 1)

And if they are smart . . . they can try to sign up an "on the way out" RCA SE.

Scuttlebutt also has it that DP head L.E. Donegan has been given a couple of months to sell off the division before it is gutted. It is fairly well known that RCA approached both Univac and Xerox before the announcement with an offer to sell. Their bids – if they made any – apparently weren't good enough. The rumor mill now places Memorex, Control Data, and Westinghouse as the probable bidders, though companies as far afield as Hitachi, ICL, and North American Rockwell have been mentioned.

News Wrapup

Man Slain Declining DP Swindle

FARMERS BRANCH, Texas – An unwilling prospective partner was murdered by a promoter seeking to finance a shady computer school here, according to local police reports.

Billy Cletus Barnes, an employee of the local Memorex office, was bludgeoned to death in late August. The murder was witnessed by an ex-Memorex employee who said he was also invited to participate in the plan to open a local computer school.

Robert A. Overton said he walked away from a planning meeting in the Memorex office when it became apparent that the deal would have been illegal. When Barnes also decided against participating, the promoter, who had identified himself as Larry Peterson, reportedly murdered Barnes and forced Overton to transport the body to a nearby airport.

Overton then left on a business trip to San Francisco, where he phoned local police and informed them of the crime. Police are still seeking the man who identified himself as Larry Peterson.

Customers Ahead Despite Conversion Costs

BUTTE, Calif. – The county DP center here lost $12,000 last year because it did not consider the cost of equipment conversion when computing fees for its customers.

The conversion from IBM to RCA gear cost about $36,000, and a flat 15% "administrative" charge fell far short of amortizing the conversion cost, local sources reported. Twenty-four user agencies and townships have balked at coughing up the $12,000 difference for the center, and local taxpayers thus face the possibility of "subsidizing" other governments, according to some officials.

DP Highlights Police Personnel Shortage

MEMPHIS, Tenn. – A computer output bottleneck has police knee-deep in court summonses. There are not enough personnel on the police force to deliver some 11,000 summonses for people who have not paid traffic tickets and who have not responded to notices sent by mail.

A computer brought the manual filing system up to date, and a special warrant squad was established to find the scofflaws, but Chief Henry Lux said the police force is falling "further behind daily" as the computer grinds out the summonses. Seems that sometimes, the long arm of the law isn't long enough.

Computer Here to Stay in Some Elections

SAN DIEGO, Calif. – Vote tabulations will be handled by computers for next June's presidential primary here, and a panel of observers will be appointed to assure that the proper procedures are used. Charles Sexton, registrar of voters for San Diego county, said the observers would create a "fishbowl operation" for the computer count, in order to preserve public confidence.

New Computers for Paris Transport Agency

PARIS – Scheduling duties for almost 4,000 buses will be part of the chores for new computers to be installed at the Paris Transport Authority. Twin Honeywell 6050s will be used to schedule buses along 1,000 miles of metropolitan routes, plus 3,600 Metro cars in 550 trains on 145 miles of track.

The computers will also perform the administrative records of the authority's 38,000 employees, plus stock management of three parts depots, and scientific and technical research for the authority.

New Library Had No 'Wheel' to Reinvent

DES PLAINES, Ill. – The new library at Maine North High School here has a computer printout instead of the traditional card file for an index. The library now has about 7,200 books.

One of the chief advantages, according to head librarian Robert Young, is that copies of the index can be provided cheaply in several locations. The file is appended quarterly, and completely reassembled less frequently. A card file is still maintained for "by-author" listings, with the computer catalog keeping listings by subject and title. Young said the Maine North library was especially suited for computerization, since no master file existed for updating.

DP Maps VA Medical Improvement Program

WASHINGTON, D.C. – As part of the second largest medical construction program in its history, the Veterans Administration is using a computer to help modernize current institutions and plan new hospitals with advanced medical services. The first phase of the program involves listing spacing requirements for various medical services, including nursing, surgery, hemodialysis or intensive care. Computer printouts will also indicate equipment requirements included in the VA equipment guide list.

'Lost' Hit-Run Victim Found by Computer

EL MONTE, Calif. – A critically injured hit and run victim was "lost" for a while recently, but the computer found her. Somewhere between the scene of the accident and the hospital, the paperwork for Yolanda Martinez was lost, and officials could not locate her.

Since the victim's condition was serious, she was admitted as a "Jane Doe" before new forms were completed. Police and computer programmers later ran a search of the hospital's computer, to compare descriptions and injuries of all the Jane Does admitted. Miss Martinez was "found" right where she was supposed to be, in the intensive care unit, and in slightly improved condition.

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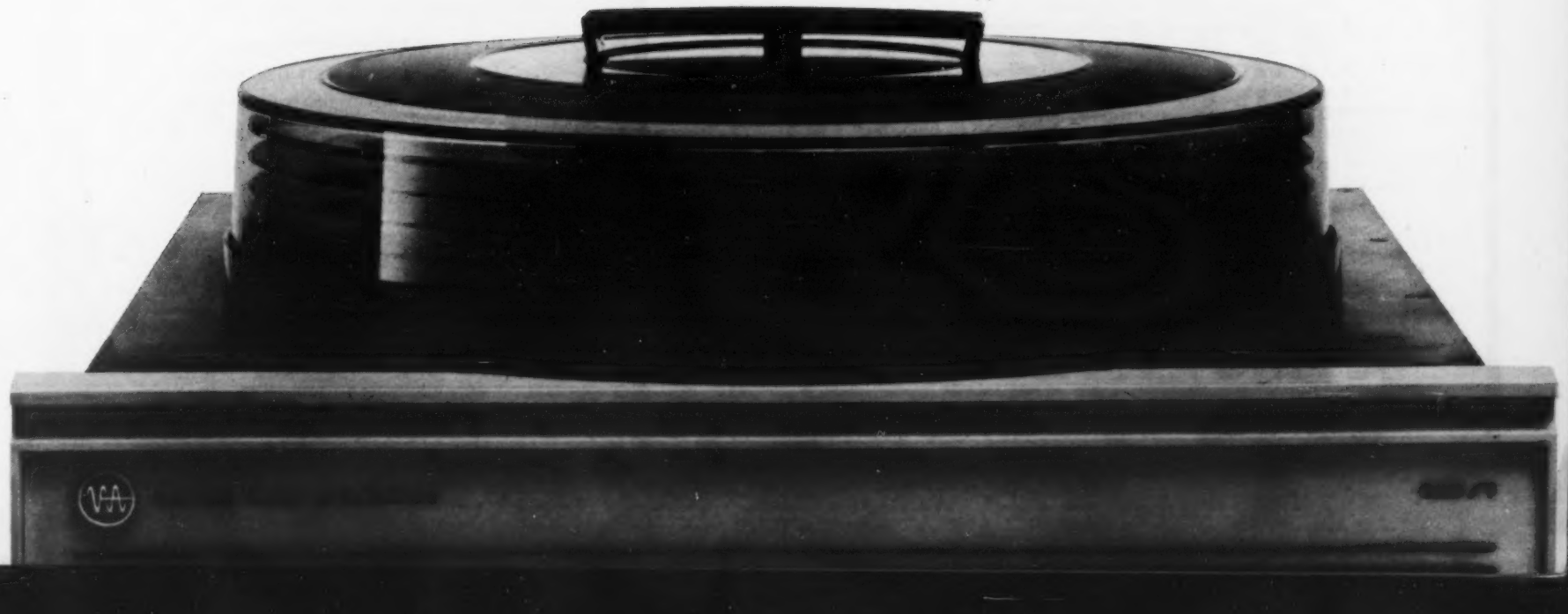

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Centralized Buying Saves Washington $1 Million

By Edward J. Bride
Of the CW Staff

OLYMPIA, Wash. – Savings of over $1 million during the next three years, plus an unusual flexibility for equipment termination, are anticipated here as benefits of an IBM disk-drive replacement program.

State and local government agencies share the benefits of centralized buying, despite the fact they each continue to order the IBM 2314-replacements as individual users.

Under an agreement between the state's ADP Advisory Committee and California Computer Products, Inc. (Calcomp), the state has already begun replacement, and all government users can take advantage of the provisions.

Regional users all obtain discounts of 1% with each new Calcomp installation, cumulatively up to 10%; the effective dates of these discounts are the respective dates of the new installations.

Regions are established to aid the vendor in maintenance, according to Ron Hamblen, assistant DP coordinator for the state.

An additional protective clause provides for penalty-free peripheral termination, if this is a result of a CPU termination, Hamblen noted.

But the big bonus comes from additional discounts which provide advantages to both the user and the vendor. Instead of a blanket lease reduction, Hamblen explained, the user pays the normal Calcomp price (reduced by up to 10%), but gets a free ride for certain months of the three-year deal.

For example, the installation month and first month are free, then the user pays the normal price up to month number 22; the 23rd and 24th months are free, as are months 33-36.

Hamblen said the contract terms were not preset, but were reached at the bargaining table, and were designed to be "attractive to the user agencies" but "not detrimental to the vendor."

Neither the CP coordinator nor the ADP Advisory Committee can impose one manufacturer's equipment on user agencies, but by working out such an innovative contract, attractive to both sides, the state has in fact promoted the 2314 replacement.

All to Benefit

Since all regional users benefit from a colleague's replacement, even the users themselves have been known to encourage this action, Hamblen noted.

While the state cannot take advantage of further price cuts by paying in advance, state officials have confirmed Calcomp's estimates that, over the three years, state agencies will save $1.3 million while spending $1.5 million on the independent drives.

At least one state has thus performed a service which has become common in the federal government's General Services Administration: central purchasing for field units.

While these field units do not come under operational or "command" control of the GSA, the purchasing agency coordinates buying, prints and distributes catalogs, and approves operating standards.

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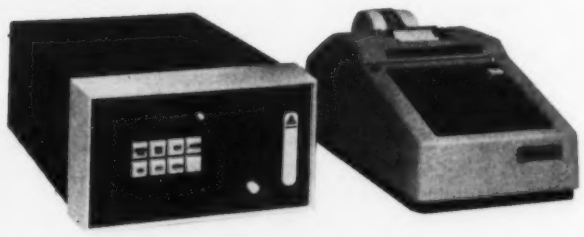

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GTE INFORMATION SYSTEMS INCORPORATED

Nevada Finds Bank MIS Suits Needs 'Immediately'

By a CW Staff Writer

RENO, Nev. – Told by the state legislature to create a cost/revenue reporting system "immediately," a state agency computerized by taking advantage of one simple fact: it had no such manual system.

Unencumbered by the need to make the computer accept forms and formats of a manual system, and unable to write a system fast enough for "immediate" use at the state DP center, the agency turned to a local bank for the forms and software.

A year's programming time and an estimated $100,000 were saved in the process.

The system is running on a Burroughs B3500 at the First National Bank of Nevada here, while state officials reevaluate the advisability of reprogramming the state's IBM 360/50 in Carson City.

The 1971 state legislature passed a law last spring requiring the development of a cost system that could charge specific items, such as studies, back to individual agencies.

State Sen. Jim Gibson explained the intention was to make some services offered by the Legislative Counsel Bureau self-supporting. "It's simply a more efficient method," Gibson said. "Once the costs are developed, it can be managed more efficiently and you'll know exactly where things are going."

'Immediate' Action

The only problem was that the bill mandated "immediate" action.

The state's legislative commission was a little more lenient and in early June asked for the cost system by July 1. The commission asked the accounting firm of Kafoury, Armstrong, Bernard and Bergstrom for assistance.

Don McGhie, certified public accountant with the firm, recalled, "we said it was impossible to design and program a cost system which could run on their computer in a month's time. It usually takes at least a year."

McGhie instead suggested the bank's Financial Management Information Reporting System (FMIRS) could be used to fill the legislative requirements, plus avoid an initial cost of $100,000 and a year's delay.

The system runs biweekly on the bank's computer at a cost of $250 per month, he added.

'Object Budgeting'

Most governmental agencies follow what is know as "object budgeting," McGhie continued. "You know how much you spent, but not what you got."

With the cost system, he added, "we have the ability to develop costs for activities such as bill drafting, special studies, audits, or whatever."

In a particular job, each segment is summarized to show who worked on it, how much time was spent, and various expenses incurred.

When the work is completed, the department head can look to the computer to determine the costs and employee productivity.

Getting all the necessary information prepared in one month was "next to impossible," McGhie said, noting much of last year's information was used to test the new system.

Sen. Gibson said the agreement with First National Bank was "until the state completes its own FMIRS." A member of the accounting firm noted the duration was "strictly conjecture."

The small amount of time and the considerable cost of reprogramming led one member of the firm to label conversion to the 360/50 unlikely, saying, "it just doesn't make sense" to reprogram.

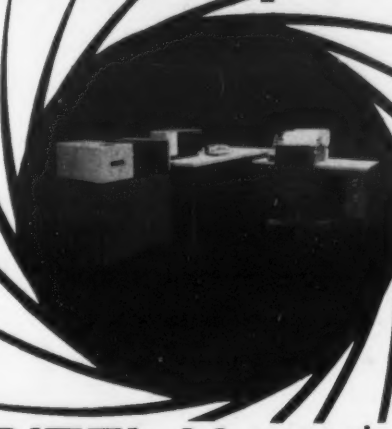
The contemplated system would also be written in Cobol, but the two machines speak "different dialects," a state official noted.

Burroughs vs. IBM

He said the 360/50 uses Ansi Cobol, but the B3500 at the bank utilizes a Cobol with more internal instructions.

Since the state center is operated as a service agency, extensive savings from the current bi-weekly $250 expenditure would not necessarily result from sending the work to the state computer, the official related.

terminal power



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Editorial

RCA Sinks Like a Rock

A few minutes after 5 p.m. Sept. 17, every RCA computer in the world turned into an Edsel.

With incredible callousness toward users and employees, RCA announced it would cease to make and market computers and then admitted it didn't yet know the details of how this decision would be carried out.

Statements such as, "RCA has made a commitment to its customers to honor existing contracts," did little to reassure its users.

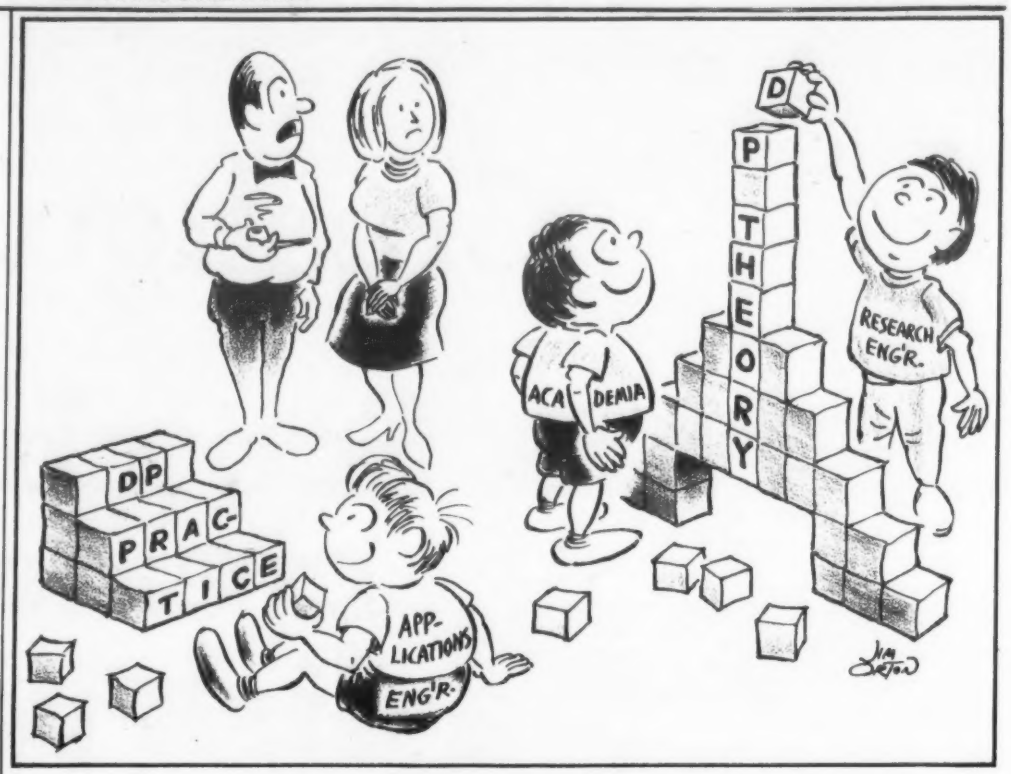
And statements such as, "In the meantime we urge you [RCA employees] to continue in your jobs until we are able to define each specific situation," did nothing to reassure employees.

The inept handling of this announcement has destroyed the credibility of RCA and has left users wondering whether RCA can be trusted to follow through on its pledge to honor existing contracts.

Certainly, RCA has dealt a damaging blow to the credibility of all non-IBM computer vendors.

But the General Electric-Honeywell merger has shown that vendors can get out of the field without leaving users hanging by their thumbs.

We urge users not to rush into the embrace of IBM out of fear that no other vendor can be trusted.



'If Only They Could Learn To Play Together'

Letters to the Editor

A DP 'Monster' Finds He Has Problems

As a 16 year DPer, I suddenly find myself taking on the image of a monster turned loose on society – you know the kind. I have a head six times larger than it should be with a nose that constantly pries into other people's business and affairs.

I disclose all confidential information I am entrusted with (even my wife's age) just for the sake of satisfying my monsterous nature.

If you doubt this, just read recent issues of *Computerworld* and other trade publications. This can also be confirmed by my wife and 10 children who are now being trained under my direction to lie, steal, cheat and to become a new generation of bigger and better monsters to be turned loose on society.

I have also infiltrated both public and private school systems in the guise of instructor in computer sciences just to propagate my own devious ideas in the hope I can corrupt others and show them the ways of an evil life.

James P. St. Jean
One of the Monsters
Birmingham, Mich.

'Whatever Happened To Computer General?'

Whatever happened to Computer General? You may recall this was the company which was developing the laser memory system in California. An announcement date was set then complete silence. Did such a company really exist? Was it developing a revolutionary new memory system?

E.D. Phillips, Technical Staff
Computer Operations Support
McDonnell Douglas
Astronautics Co.
Huntington Beach, Calif.

Computer General was (is?) working on a laser computer, not just a memory. We are still waiting for it to be shown. Ed.

Norway Reader Has Information on 'Mary'

I have recently begun circulating information about Mary, our "high-level assembly language" based on Algol 68 and generating code for a group of 16-bit minis made here in Norway. The response has been so strong that I have also begun circulating information about two other such languages in the works here: PL-1108 (very similar to PL-360 but for the Univac 1108) and an Algol-like implementation language for an Algol 60 compiler for the PDP-11.

For the time being I shall act as a clearing house for workers in the general field of machine-oriented high-level languages. Would those who have worked in this area or are interested contact:

Mark Rain
Computing Centre
Technical University of Norway
7034 Trondheim NTH
Norway

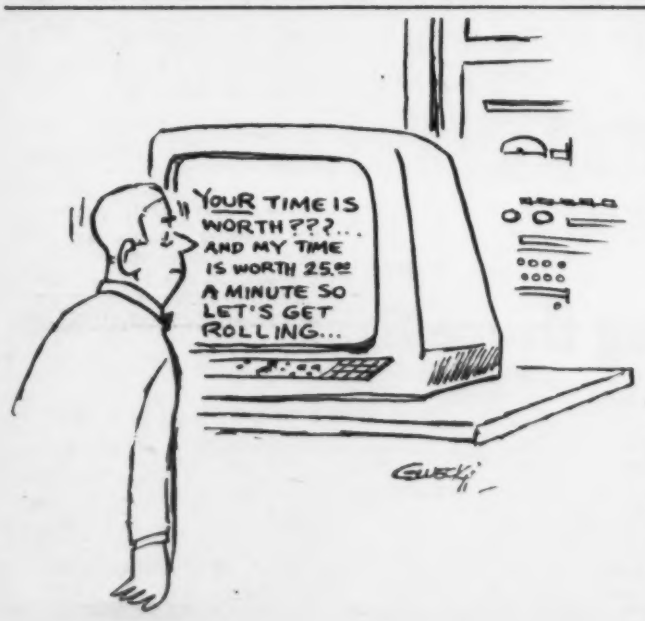
Team Effort Creates Software for NLHE

We appreciate your report on the NLHE Information System in the Sept. 8 issue. But we think your readers would be equally interested in the way the system was developed.

Mr. James Runde at Clarke College, Dubuque, Iowa, and Dr. Ray Nanney at Furman University, Greenville, S.C., actually developed the system in cooperation with the National Laboratory for Higher Education (NLHE). The laboratory coordinated their efforts, conducted evaluation and revision work, and is disseminating the system.

Cooperative development of software packages is the prime mission of the NLHE effort in information systems, and it is important that Clarke and Furman receive credit for their major role in developing and testing the system. To date, more than 170 users have acquired the system.

Michael Abbott
National Laboratory for
Higher Education
Durham, N.C. 27701



Diners Club Finds Answer To Multiple Complaints

The Diners Club, whose accounting system has often been attacked by people trying to keep their accounts straight, has apparently found one way of keeping the complaint level down – particularly those types of complaints that are copied to various federal and state authorities, Better Business Bureaus, Ralph Nader, etc.

It won't, of course stop the complaints altogether, but it will certainly reduce their effectiveness in many cases.

What Diners Club did was redesign the forms, printing much of the vital data in non-reproducing blue. As a result, after it has been put into the copying machine, the output simply is almost incomprehensible, and certainly much less persuasive to other people who may want to read it.

I can't say that I like the practice, but whether it should be considered acceptable would appear to be related to the particular document. However, at a minimum I would think documents covered by legislation – such as bills including interest charges, as a result of the Truth-in-Lending Act – should be completely reproducible, especially such vital areas as descriptions of the meaning of the various figures.

Use of disappearing inks has long been regarded as improper accounting practice – so I don't see why in our modern, copy-prone world, the use of disappearing-during-copying inks should be approved.

Taylor Thoughts

STATEMENT – RETAIN THIS STUB FOR YOUR RECORDS	
ACCOUNT NUMBER	1912-9570-8
STATEMENT DATE	06-18-71
PREVIOUS BALANCE	9.13
PAYMENTS	.00
CREDITS/ADJUSTMENTS	.00
PAST DUE BALANCE	9.13
LATE FEE SEE BACK OF STATEMENT*	.50
CURRENT INSTALLMENTS	.00
FINANCE CHARGES	.00
CURRENT CHARGES	.00
	9.63
NOTICE: SEE REVERSE SIDE AND ACCOMPANYING STATEMENTS	

	3	
	1013	
	5	
NOTICE:		1013
	7	
	9	SEE ACCOMPANYING STATEMENT
PAY THIS AMOUNT	1013	
FINANCE CHARGES	1013	08-13-71
	1912-9570-8-000	

The two bill stubs above illustrate the effect of placing the old and new Diners Club bills through a normal office copier. While under the old system all the vital information describing the number concerned, Statement Date, etc. comes through normally, while on the second copy it disappears. Notice the change in the program eliminating the decimal point between the dollars and cents, running the two figures next to each other, thus making them less clear. Also the small numbers on lower left are useless to the reader because they have no identifying code. Illustrations have been reset for purposes of clarity.

How One Man Handled a Problem

Can Computer Competance Avoid Computer Chaos?

William Eccles has unusually good reasons to be considered a skilled computer man. To start with, he happens to be the director of the University of South Carolina computer center, which isn't a post that one reaches without being pretty good.

But quite outside his university position he also happens to have been able to forecast – apparently uniquely – that a computer-based application would fail. He has been surprisingly right, and has been able to handle the problems.

The Taylor Report
By
Alan Taylor, CDP

And, in doing so, he quite unwittingly may have posed a neat question about the new ACM ombudsman program for combating the "blame-the-computer syndrome."

PR Raises Doubts

It all started early this summer when he received a beautifully prepared public relations announcement from South Carolina BankAmericard. He first showed his skills when he received it; he was suspicious. "It usually means a reduction in service or an increase in cost," he said.

Luckily his suspicions made him read not merely the announcement of the new service, or the new layout – but also note 13 to find out what a "Transaction Description" meant. Many people would not have been so careful. After all – it's obvious what it means, isn't it?

Incorrect Field Heading

Note 13 reads "Transaction Description – This column lists the BankAmericard merchant at which the transaction took place. Out-of-state purchases will be indicated only by the state in which the transaction took place." To be precise, it was not a transaction description at all. It was the location of the transaction.

Confusion Forecast

Thinking about this, and how it would operate in fact, Eccles wrote to the president of South Carolina BankAmericard, and pointed out to him that the listing of only a state for a transaction makes the listing very confusing.

He received a response, which commented on the cost of keeping and providing records, and saying that no one else had complained.

Incorrect Billing Follows

Very probably, that would have been the end of that. Eccles never would have known whether he had been right in suggesting that confusion would arise, or certainly not until he used his credit card in other states. But things did not work out that way. Instead, the very first statement he received on the new system had an out-of-state transaction included, which certainly confused him. It was for an Oklahoma transaction – and he had not been in Oklahoma for about 10 years!

An inquiry to South Carolina BankAmericard located a description of the transactions – simply that it must have been a purchase at some Phillips 66 station! Not very useful, all things considered.

So then, after being proved right in his forecasts, Eccles did what he felt the situation demanded – he returned his credit cards. And this is where the ACM ombudsman program comes into question.

Because the basis of the ombudsman program is that skilled computer people like Eccles, can effectively cope with the various blame-the-computer attacks. This has been shown only to be true in a few cases.

This column has in the last few months reported instances in which a DP professor has been charged ridiculous interest rates – and found it cheaper to pay than fight; where a post-graduate student has been unable to find out his grades; and other instances of how professionals have suffered just as the rest of the population has.

Here, where we have the case of a really skilled man who had foresight, who took action ahead of time, and who later was proved right, we find that the way he copes is by opting out.

And, as Eccles is certainly one of the skilled computer people who would be qualified to be an ACM ombudsman, one wonders if ACM might find itself suggesting that its ombudsman should advise all the subscribers to South Carolina BankAmericard to follow Eccles' example and tear up their cards.

This would appear to be a reasonable suggestion under the circumstances – but I think that the law suits that might result against the association could be quite fearsome.

Or is ACM really wanting its ombudsman program just to deal with the cases where the computer is being "unfairly" blamed – which is the task of a public relations firm, not that of an ombudsman. An ombudsman essentially deals with the case where the blame is fair – and then moves to correct matters.

When ACM starts accepting the fact that much of the blame-the-computer syndrome is warranted, and is not unfair; and that people in the industry often find that boycotting computer applications is the way to cope with the current situation – then the ombudsman program may be able to deserve its name. Hopefully that time will come soon.

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Coping With 'Computer Errors'

I was delighted to receive my 'new statement' this afternoon, because it very clearly confirmed my comments to your president when I first learned you were going to drop the enclosing of copies of the actual transaction documents. In my letter to him, I noted that this places the burden of inconvenience on the customer to make your job simpler. Moreover, the listing of only the state for a transaction makes the listing very confusing, especially if several transactions were made in that state.

This month my statement has exactly two transactions. One is a payment, which is clear and nonconfusing. The second is an 'Oklahoma Transaction'. Since I haven't been in Oklahoma for about 10 years, I am forced to call to find out what this is all about. In other words, you and your computers have opted for my inconvenience.

As you can see by the enclosed cards, I have opted for my convenience. Good luck with your new system. It is clearly a technological improvement, and that is what this world really needs.

Sincerely yours,
Wm. J. Eccles

The above letter is a copy of one sent by the director of South Carolina computer center as his method of coping with a "computer" error situation. Whether or not the ACM ombudsman program, which is charged with advising the public how to cope with computer complaints could equally consider such a method of coping is questioned in the accompanying text.

A Special Supplement Devoted to OEM

Computerworld's editors will examine the entire OEM market-place in a special supplement to be included in our October 27 issue.

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Preregistrants Paying Lower FJCC Fees

LAS VEGAS – Preregistrants for the Fall Joint Computer Conference may take advantage of a $10 discount on the full conference fee, thereby reducing the price to $20 for members of the 12 American Federation of Information Processing Societies (Afips) constituent societies, and $50 for non-members.

Fees for those who register at the conference will be $30 for members and $60 for nonmembers. Students and military personnel in uniform may register for $5. Preregistration will close Friday, Oct. 29, added Afips, conference sponsor.

Ralph R. Wheeler, conference chairman, said preregistrants could save "considerable time" by avoiding the last-minute rush and long registration lines at the conference.

In addition, those who preregister early, and who use the Afips housing bureau form, will be assured of accommodations convenient to the site, he added.

The convention center is expected to host up to 25,000 visitors for the exhibits and technical sessions, according to Afips.

Full registration fees, both in advance and at the door, include one copy of the Proceedings. Non-members who register for the full conference may apply half the difference ($15) towards membership in any one of the Afips societies.

Information and forms from Afips headquarters at 210 Summit Ave., Montvale, N.J., 07645.

Overseas MaGen Users to Convene

DENVILLE, N.J. – Overseas users of the Matrix Generation system are growing in "ever increasing" numbers, said Haverly Systems Inc. in announcing an international users group.

Known as MaGen Users Group International (Mugi), the new group will hold its first annual meeting in Munich, Germany, Dec. 6-7. Future meetings will be held in various European and Middle Eastern cities.

The international group is modeled after the stateside organization, but with "special emphasis" on overseas needs, Haverly said. Coordinator of user group activities is George Lowell at the company's offices on 4 Second Ave.

COMPUTERWORLD

societies/user groups

Back-to-Back Shows

DP Users Plan With Bema

By Edward J. Bride
Of the CW Staff

ST. LOUIS, Mo. – A computer-oriented conference will be held here Nov. 3-5 by the American Production and Inventory Control Society (Apics), just a week after it shares the billing at the Business Equipment Exposition in New York.

The Business Equipment Manufacturers Association (Bema) has called on four professional societies to conduct the technical sessions while it runs the extensive exhibits at the New York Coliseum Oct. 25-29 [CW, Sept. 1], and Apics has joined that group.

The exhibit floor will receive much less emphasis at the November meeting here, with about a dozen "leading" computer and related companies showing equipment.

The technical portion of the Apics meeting will include discussions of the practical application of linear programming techniques to production and inventory management problems, and the evaluation of production and inventory control software packages.

Other sessions will discuss more general management concepts, such as the "clog" in management's use of computers, plus DP requirements planning in the "real world."

Apics has taken some innovative means to spruce up the attractiveness of advance registration: instead of mere price reductions, it is offering a weekend trip to the Ozarks as a type of door prize for one couple, and a $30 society handbook to 10 other winners.

At the Bema show in New York, Apics will conduct two half-day tutorials on the selection and use of alternative techniques for "computing lot sizes in inventory management systems." Terminals and closed circuit TV monitors will enable attendees to solve problems in simulated industrial and business conditions.

Other organizations sponsoring independent, concurrent meetings at the Coliseum show are the Administrative Management Society, "word processing," the National Retail Merchants Association, "point-of-sale automation," and the U.S. General Services Administration, "source data automation and the years ahead."

Users and industry experts will both present Apics technical sessions; the more lengthy Bema meetings are of the tutorial or symposium nature.

Over 60 types of business equipment will be demonstrated including computers, data communications equipment, and microfilm equipment, Bema said.

Apics information is available from the society's international headquarters, Suite 504, Watergate Bldg., 2600 Virginia Ave., Washington, D.C., 20037.

Monthly UK Meetings Host ACM Travelers

LONDON – The British Chapter of the Association for Computing Machinery is launching a program to promote contact between the local computer community and ACM members visiting the United Kingdom.

B.C. Rowe, chairman of the British chapter, said a series of semi-social events would be conducted for visiting computer professionals, including open discussions and well known speakers "not necessarily concerned with computers."

The chapter plans to hold these events every month, beginning in November, and Rowe has asked ACM members planning to travel to the UK to send him a short note, informing him of the dates of their stay and a UK address where they can be contacted.

Rowe is at the London Polytechnics Computer Unit, the Polytechnic of North London, Holloway, London, N7 8DB.

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CW-6

Random Notes

Proprietary Extends APL; Adds New ATS Capabilities

VAN NUYS, Calif. – Proprietary Computer Systems has enhanced its APL timesharing service by making 48K workspaces available to users. Before the enhancement, the APL workspace, which includes both data and program coding, had been limited to 32K bytes on the Proprietary system.

In another area, Proprietary has also enhanced its Advanced ATS System. It now includes a Super Find and Replace System with full Boolean capability, an on-line sort and an on-line formatter for reports, the company said. PCS is at 16625 Saticoy St., 91406.

Independent Consultants Give Mini Users Unbiased Advice

ENCINO, Calif. – Consulting service geared to users of minicomputers but unbiased by affiliation with any hardware vendor or organization is offered by Perrin-Johnson and Associates (PJA), 16024 Ventura Blvd., 91316. Support from PJA can include feasibility study and analysis, system evaluation and selection, custom software and hardware design, and installation supervision, the company said.

Tektronix Graphic Terminals To Use Corning 904 Software

BEAVERTON, Ore. – Tektronix, Inc. has acquired the software packages originally developed by Corning Data Systems for use with the Corning 904 terminal. Corning has withdrawn the 904 from the market; Tektronix will use the packages in support of its Interactive Computer Terminals.

The packages emphasize subroutines which can be called by user programs to format and display numeric information graphically without hand plotting, Tektronix said. The company can be contacted through P.O. Box 500, 97005.

ICS May Replace Edit Routines

NEW YORK – The need to program entry validation and editing routines for each application may become unnecessary if a user can implement the concepts of an Input Control System developed by Computer Planning Corp., (CPC), 315 Fifth Ave., 10016.

The system, tailored to each user's needs, incorporates 'Directories' which define the validation and edit rules for each data element. Relationships between data elements are also defined.

CPC recommends an on-site feasibility study to determine if the concepts of the Input Control System can be applied to a given situation.

City Planners Get Software

CAMBRIDGE, Mass. – A modular but integrated system designed specifically to fulfill the needs of urban and regional level planners, Cityplan is available from Urban Data Processing, Inc., 552 Massachusetts Ave., 02139.

Modules can be leased for from $30/mo to $100/mo and include file generation and maintenance, cross-tabulation, mapping, geocoding, Dime file editing, sorting and bar charting. Cityplan is written in 360 Assembler, with some portions in Fortran IV.

Test Errors Listed

Files Evaluated With 'Output Checker'

By Don Leavitt
Of the CW Staff

BURLINGTON, Mass. – How well did an apparently successful test session really go? Did the program produce the expected results?

The answers are available to IBM 360 users, without manual reviewing tape or disk dumps, or printed reports, through the Output Checker package, just introduced by Synergetics Corp.

A parameter-card driven, load-and-go program, the Checker analyzes one file at a time and reports, in detail, by record and data field, where the file failed to meet the user's specifications. The package is said to be capable of analyzing any file on any device, including tape images and files with varied record formats.

The package allows both file level tests and record level tests. The file tests would include determination of whether records are of acceptable types, or whether they are in ascending or descending sequence, a spokesman explained.

The checker can also look for errors of record frequency and/or occurrence, and whether records have the expected relationship to one another. The validity of field formats and contents, and of relationships of fields within a given record can also be analyzed, he added.

Through the parameter cards, the user can define control breaks, and use this information to check for appropriate actions on print image files. The Checker can be used, for example, to accumulate field totals and to compare its results with those included on a sub-total line in the print file.

Almost as important as the details of what can be analyzed with the Checker, in the view of the company, is the fact that the package provides an installation with a standard approach to program and system testing. The programmer might well be required, for example, to include a "clean" Checker report for all files with his documentation before a program is put on operational status. The Output Checker has been implemented in both OS and DOS/360 versions, and uses 64K bytes of core.

The package is available under a permanent license agreement for $3,750, from One Garfield Circle, 01803.

'Easydata' Retrieves Information Under On-Line or Batch Versions

EDINBURGH, Scotland – An information retrieval system designed for use on DECsystem-10, IBM 360 or ICL 1900 CPUs, Easydata is available in either on-line or batch-oriented versions from Conversational Software Ltd.

In its on-line implementation, the system supports conversational inquiries from teletypewriter terminals, but will respond, on command, to a line printer, for lengthly reports. The batch version which responds to punched card input can be updated to the conversational system at any time, the company said.

Easydata can utilize "most" existing tape or disk files as its data base, without modification, according to a spokesman. New files can be created at any time through the on-line implementation.

Multiple requests for information from the same file can be processed together, with one reading of the subject file.

Among the statistical functions available to the Easydata user are the ability to produce totals and averages based on fields defined by-the user.

Easydata is written in the developer's proprietary POP2 language and requires less than 20K words of storage on the DECsystem-10. Both the batch and on-line versions require disk work space.

The system was priced at "under $20,000", the spokesman said, but then noted that the price was announced before the recent floating of the dollar.

Conversational Software Ltd. is at 5 Hope Park Sq., Meadow Lane, Edinburgh EH8 9NW.

Westinghouse Adds BOM Package

PITTSBURGH, Pa. – A machine-independent Bill of Materials processor, a package to improve the organization, maintenance, and flow of information in engineering and manufacturing departments, written in ANS Cobol, is available from Westinghouse Tele-Computer Systems Corp. (WTSC).

The BOM provides the user with a centralized data base of complete product data. With this it is able to generate detail part explosions from customer orders or forecasts according to fixed or variably defined product structures.

In common with other BOMs, the WTSC package provides information retrieval capability on demand in the form required by the user.

This package is rather unique, according to WTSC, in that it includes both the structuring of the BOM master file and complete generation of reports. Other BOMs generally do not include the report generator, the company said.

In building the master file, the user can identify those items which are optional and which, if present, may be in varied quantities. Other items, which are required even though the user has a choice, can also be "marked" as the file is being built.

The basic WTSC system requires 32K bytes of core beyond the space required by the user's operating system. It requires two 2311 or 2314-type disk packs, and support for index sequential files

The package costs $5,500 including three days of evaluation and seven days of installation help. WTSC is at 2040 Ardmore Blvd., 15221.

'Sprint' Has Job Accounting, Spooling in Single Package

MANTECA, Calif. – IBM 360 DOS users considering either Job Accounting or spooling packages as means of improving their operations, can acquire both capabilities in a single package, Sprint, developed and available from Jason Data Services.

Sprint is said to support both printer and punch spooling in as little as 2K bytes of core. It can utilize either tape or disk for intermediate storage of the print or punch images.

The job accounting support included in Sprint is designed to interface with the DOS release 25 accounting module. Sprint captures, and later reports, the job step timing records generated by the IBM coding.

The package is available under a $95/mo rental plan, from Jason at 903 E. North St., 95336.

CD Program Runs in 24K Bytes

ORLANDO, Fla. – Certificate of Deposit accounting in branch or unit banking states can be handled by a DOS/360 user with the CD package developed by Florida Software Services (FSS).

The package includes simple and compound interest accrual, payment disposition, check writing, preparation of the IRS 1099 reports and other required CD functions.

The FSS CD package is written in Cobol and requires 24K bytes of core, and disk space for the Index Sequential master file. It probably could be adapted to other CPUs or to OS/360, a spokesman added.

The package costs $1,900 and can be ordered from FSS, at Suite 136, 988 Woodcock Road, 32803.

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Vendors Aid Changeover

Conversion to COM May Mean Little Reprogramming

By Don Leavitt
Of the CW Staff

The prospective user must consider many factors in deciding whether to use Computer-Output-Microfilm (COM) devices instead of conventional printers, but programming and software support apparently need not be one of the major considerations.

With many COM units, the user is not required to make any programming changes, unless he is changing his system approach. If he has been printing on-line, the user can shift to on-line COM painlessly. If he has been preparing magnetic tape for off-line printing, the user can continue to utilize the same tape with an off-line COM.

Although COM units generally accept output originally formatted for line printing, the manufacturers say that this is not efficient. Here again, however, they provide the means to handle the situation quite easily from a programming standpoint.

Some COM manufacturers provide utility programs, for example, that convert the original off-line print tape into a format that is more efficient for the COM unit. Otherwise, the COM makers almost universally provide software and/or coding techniques that the user can build into his own programs to generate output that is COM-oriented without a reformatting run.

Major computer manufacturers provide very little software support for COM. Although lack of support is no doubt due to the limited interest shown by users for this form of output, it may also reflect the effectiveness of the software that the COM makers already provide.

The desirability of reformatting printer-oriented tapes for off-line COM is based on the way in which the COMs handle the tapes mechanically. COMs generally react to a "Skip to Channel 1" control code by skipping to the next block of tape records, as well as going to the next microfilm frame.

In this situation, the COM then has to backspace the tape to find and use the bypassed records.

To avoid this, the user can pad fixed blocked tape records so that data for two frames or pages are not in the same block, or shift to variable length blocks on his output tape. Another move towards preparing mag tapes in COM native mode, substitution of COM-understood control codes in place of conventiomal printer control codes, would also improve the efficiency of the COM operation.

Consider Redesign

Although the user can shift to COM 'native mode' with relatively minor programming changes, or use printer-simulation capabilities and stand pat with his coding, he might well consider system redesign to take advantage of COM's flexibility. Page-at-a-time output provides him with several options that simply are not available with a line printer.

The COM control codes, for example, allow the user to place data anywhere on the page immediately rather than having to place it in storage until the line in which it should appear is generated.

This 'put it anywhere' flexibility can be used for far more than easing such conventional chores as listing items in columns. It can be used, for example, to put multiple copies of a data field in different locations on a page, or to place data in precise positions based on some user-defined characteristics of the field.

Carried one step further, this flexibility permits COM devices to be used for graphic plotting or for the overprinting of a design on the page being generated. Though many COMs can produce nothing but alphanumerics and a limited number of special characters, some are limited only by the user's ability to define the character he wants to generate.

Some of the COM units require the user to program the form on which the data is to be printed, but most are now using a 'forms flashing' technique. This involves the projection of a form image onto the microfilm simultaneously with the projection of the data. The slides or glass plates that hold the desired image have to be put into the COM by the operator before each run.

Revised forms are available as soon as new slides or plates can be prepared, so the 'forms flashing' technique would appear to allow changes much more quickly than would the ordering of conventional pre-printed forms for printer operation.

One of the real drawbacks of COM also revolves around this departure from conventional printer-oriented logic. Many users feel they have to maintain two separate versions of a program, and a standby supply of current forms, in case the COM unit becomes inoperative. Several of the COM manufacturers have apparently been unable to give proper service when needed, so the double programming seems to be a realistic if burdensome form of protection.

As a matter of fact, the condition of the manufacturer rather than the peculiarities of software required for COM utilization might well be the biggest single factor delaying the long-heralded COM revolution. Several of the manufacturers have had to throw in the towel and file bankruptcy papers. In some cases, this has left users of the defunct manufacturer's equipment without any support to back up a fairly substantial commitment to a new system.

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AT&T Must Act

FCC's Telpak Order Could Liberalize Sharing Rules

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – To share or not to share – that is the stormy Telpak question now facing AT&T.

The Federal Communications Commission has ordered both AT&T and Western Union to file tariff revisions "eliminating the unlawful discrimination found to exist in the Telpak sharing provisions."

At present only users such as public utilities, government agencies, and airlines enjoy Telpak discounts but this could change when AT&T reacts to the FCC's order.

The order resulted from the U.S. Court of Appeals decision last July that said the Telpak sharing provisions were unlawful.

Communications

At issue in the long-smoldering Telpak controversy are the provisions that allow some users (mostly the larger ones) to get substantial discounts in bulk line charges.

The FCC notice which instructs AT&T and WU to file their revisions within 30 days, suggests several possible solutions to the discriminatory sharing provisions. The actual decision will be made by AT&T since WU's Telpak tariff is identical to the Bell offering.

AT&T could decide to offer unlimited sharing to all users both large and small. But it previously told the FCC that such a move would eliminate any difference between Bell's regular private line offerings and Telpak. Even so, some observers see unlimited sharing as a way for AT&T to counter the emergence of the new specialized common carriers.

Elimination Possibility

A second possibility would be for AT&T to eliminate all sharing provisions under Telpak. But such a move would arouse users who would lose the cost advantages they now have.

The most probable outcome of the FCC order, according to one former FCC staff member, is the elimination of the Telpak tariffs by Bell.

"Telpak was the discriminatory tariff of the 60's," he said. "Now AT&T will probably file something new that will become the same thing under a different title."

The Telpak tariffs were established in 1961 for industries and government agencies which have large bulk private line requirements. Originally Telpak A, B, C, and D were offered with a capacity of 12- to 240 voice channels. In 1967 Telpak A and B (12- and 24 channels) were eliminated because the FCC said they were discriminatory in favor of the larger users. The Telpak offerings are flexible and can be used for varying forms of voice and data traffic.

Drawn-Out Hearings

The Telpak hearings have extended for many years before both the FCC and later the courts. In addition to the discriminatory aspects of sharing (because the tariff does not give all users equal benefits) Bell has been challenged on the costs of the service.

Since the Telpak tariffs are designed to offer discounts to high volume bulk line users, the FCC has questioned whether other AT&T services actually were subsidizing such discounts.

A new substitute for Telpak might well include sharing or similar cut rate charges for smaller users since the Bell System is very much aware of the competition it will soon have from the specialized common carriers.

Even before the FCC order, AT&T had formulated a "block pricing" proposal that would have opened sharing to a broader group of users. But this proposal, which would have been at least a partial solution to the Telpak problems, met with user displeasure and was never formally proposed before the commission.

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Data Briefs

Redecom Digital System Includes Total Support

WOODLAND HILLS, Calif. – Redcor Corp. has introduced the Redecom store-and forward digital communications system on a turn-key basis with complete operating software.

The Redecom system can handle up to 64 asynchronous circuits on private or dial-up lines.

A typical configuration based on the Redcor RC 70 processor with tape and disk peripherals costs $150,000 or $3,500/mo on a three year lease from 21200 Victory Blvd., 91364.

Design Elements Has 101 Modems

COLUMBUS, Ohio – Design Elements Inc. has developed a series of 300 bit/sec data sets compatible with the Bell System 101C.

Designed to operate with teletypewriters, the 101 series includes five versions. Included in the data sets is a loop-around function to test the operation of the terminals.

Prices for the Design 101 range from $500 to $750. The firm is at 1365 Norton Ave., 43212.

Epoch 4:

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Budget cuts are just one indication of the general "tightening up" in EDP. Yet GMI's premium-priced Epoch 4 computer tape is still rolling up big sales gains.

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Bits & Pieces

HP Disk System Has New File Management Software

PALO ALTO, Calif. – Hewlett-Packard has configured its equipment into a disk-based system designed specifically for data base applications by the addition of extended file management software.

The 2120A system includes the 2100A CPU, 7900A moving head disk, and additional optional storage from the 2883A disk drive.

A typical system including an 8K processor, a 7900A with 5M bytes of 8-bit storage and Model 33 Teletype costs $32,950, H-P said. On a five-year lease the system is priced at $760/mo.

DSI PDP-15 Add-On Core Has 800 nsec Cycle Time

WALTHAM, Mass. – Dimensional Systems, Inc. (DSI) has announced an add-on core memory system for the DEC PDP-15. The model DMS-15 operates with an 800 nsec cycle time and is available with 16K or 65K of 18 bit memory. 18 bits of address are recognized by the unit allowing indexed registering to 131K of core.

Interfacing is said to be accomplished simply, without added wiring. A typical 32K block sells for less than $25,000 installed. Dimensional Systems, Inc. is at 393 Totten Road, 02154.

System/3 Disk Cartridge Replaces IBM 5440 Units

NASHUA, N.H. – A coated disk cartridge for external memory storage on System/3 CPUs has been developed by Nashua Corp. as a replacement for the IBM 5440 disk.

The Nashua 4440 disk cartridge is compatible with IBM System/3 and System/7 disk drives. The 4440 cost is said to be "competitive" and deliveries will begin in October. The firm is at 44 Franklin St., 03060.

Firm Adds Graphic Systems

CAMBRIDGE, Mass. – Input Output Computer Services Inc. has added two versions to its Anagraphic digitizing and processing system used for graphic and pictorial data reduction in scientific applications.

The new System 2 and 3 include an acoustic tablet and stylus interfaced with a DEC PDP 8/E, a Model 33 Teletype, and a modular software package which includes an interactive control program.

System 2 costs $22,050 or $469/mo while the System 3 is priced at $31,500 or $669/mo. The firm is at 138 Mt. Auburn St. 02138

360/370 Compatible

CDC Adds 2314 Double Density Disk

By Michael Merritt
Of the CW Staff

MINNEAPOLIS – And now there's a double density disk from Control Data Corp., making the total number of vendors of the advanced 2314 replacement five.

Double density disks offer better access times and twice the storage capacity of 2314s. They use the same 2316 disk packs, though.

CDC's 23142 has a maximum capacity of 466M bytes, achieved by writing 200 tracks on each inch of disk surface. The 2314 writes 100 tracks per inch.

CDC said the 23142 offers a price per million bytes of storage that is lower than IBM's 3330.

The 23142 has an average access time of 25 to 35 msec, and uses an electromagnetic actuator for head movement. It also has an emergency retract to prevent damage in case of power loss.

CDC said the unit is compatible with 360 and 370 selector channels and uses the same command set as the 2314, so no hardware or software modifications are necessary.

Layouts of from three to eight spindles plus a spare are possible, CDC said, and single density drives can be included for rewriting disks.

Monthly prices on a one-year lease range from $2,900 for a controller and three spindles to $4,750 for an eight drive layout. Purchase prices range from $95,500 to $188,000. First deliveries are scheduled for October.

For comparison, Marshall's M290 dual density system with an average access time of 40 msec costs $5,196/mo for a controller and eight drives and sells for $204,000.

Memorex's 3665 systems, with an average access time of 35 msec, costs $4,725/mo for controller, eight drives, and spare. Telex's 5600, which boasts an average access time of 29 msec, costs $5,190 for an eight drive and controller system, maintenance included.

Calcomp's 1015 system has a maximum of five spindles. A three spindle system with a 35 msec access time leases for $2,680, slightly less than CDC's three spindle layout.

Reverse Echoplex Used to Check Printouts at Remote Locations

By Ronald A. Frank
Of the CW Staff

POMPTON LAKES, N.J. – A terminal designed to check the accuracy of printed characters at remote sites will be introduced later this year by Terminal Equipment Corp.

The Holmes Tycom 35/37 Model E uses a reverse echoplex technique which verifies each character received at the terminal by transmitting it back to the CPU. The verification method is said to be compatible with most CPUs supporting Ascii-type terminals although "limited software changes" are required, according to the company.

The Model E includes a logic console which allows the operator to select Ascii control characters, batch or interactive mode, and transmission rates of 110, 150, or 300 bit/sec.

After receiving a message from the CPU, the terminal disassembles, decodes, and prints each character. During the print cycle the character printed is sensed, reassembled, and transmitted back to the computer for verification.

If the CPU detects that an incorrect character has been printed, the operator is alerted. On positive verifications, the next character is transmitted. But the simultaneous printing and retransmission of each character makes it impossible for the user to avoid printing an incorrect character.

The Model E includes paper tape reader/punch and acoustic coupler options and the terminal can print at 15 char./sec. It is designed for both in-house and time-sharing applications.

The first application will interface the terminal with a Varian 620/i operating as a front end to a 360/40, according to a company spokesman. But most processors capable of handing remote Ascii-type terminals will be able to interface with the Model E, he said. The required software changes were described as affecting the input routine of the applications package to enable it to support the reverse echoplex process.

The terminal will cost $3,400 or $94/mo on a lease basis. Maintenance adds $16.50/mo. First deliveries are scheduled for November. Terminal Equipment Corp. is at 750 Hamburg Turnpike, 07442.

System/3 Users Get Compatible 80-Column Plug-In Card Reader

PHILADELPHIA, Pa. – A plug-in 80-column card reader for IBM System/3 will make the small CPUs more compatible with larger 360s, 370s, and other card-oriented systems.

Called the Model 8063, the unit reads at 500 card/min from a 1,000 card input hopper.

System/3 users normally are limited to 96-column card input via the IBM 5424 Multi-Function Card Unit (MFCU). But IBM does offer the 1442 80-column card Read Punch as a special RPQ to System/3 users.

The 1442 for use with System/3 is priced at "more than $500/mo," according to Bridge Data Products. The new 8063 leases for $200/mo on a 36-month plan with maintenance, a Bridge spokesman said.

On a purchase basis the 8063 is priced at less than $5,000 with two years maintenance. The device is available for 60-day delivery. It is said to be plug-compatible "without program modifications."

The low-cost 80-column input capability will enable System/3 users to retain conventional card systems in applications such as inventory, payroll and automatic time clock systems, a Bridge spokesman said.

The firm is at 738 South 42 St., 19104.

Victor Has Two Billing CPUs for 800 Series

CHICAGO – Victor Comptometer Corp. has expanded its series 800 to include two desk size ledger-card oriented processors.

The 820/08 and the 820/24 combine core and rod cell memories for a storage capacity ranging from 16 to 256 words of 16 bits each. Both systems work with magnetic stripe ledger cards.

The systems include a modular operating system but application packages are added cost features ranging from $400 to $800 for jobs like inventory and billing.

A 16 word 820/08 is priced at $7,540 while a 32 word 820/24 system costs $17,300. Prices include maintenance for one year. A 12-month lease plan is available for about 3% of the purchase price per month.

Both systems are available now from 3900 N. Rockwell St., 60618.

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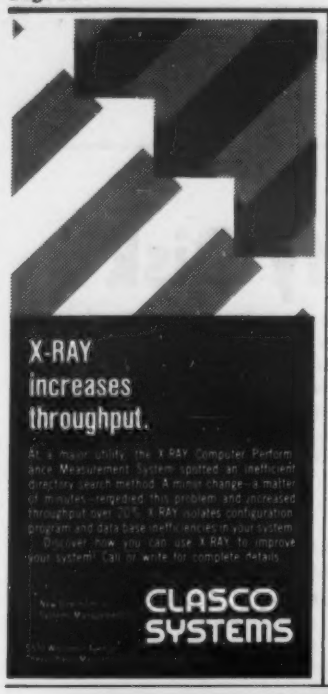
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CLASCO SYSTEMS

Printer Output Microfilm

Low-Cost Film Method Solves Paper Glut

By Richard A. Thompson
Special to Computerworld

Printer output microfilm (POM) provides a means for computer users to get into microfilm on a low-cost budget, and with proper application it will meet most requirements of DP installations.

To some users POM will offer an immediate solution to their paper handling problem and aid in later conversion to a COM system.

While POM is not as sophisticated as COM, it is by its simplicity and lower cost more suitable to the needs of many small and medium size computer installations who also have a storage and retrieval problem.

Large computer installations that already have a COM system can use POM for the small but bothersome percentage of work not suited to COM.

The POM system is a free-standing unit that takes the complete printout from existing printers and copies it into microfilm at rates from 15 in.- to 56 in./sec or 20,000 lines/min. Based on this rate, one POM system is capable of handling the output of from five to 10 printers, depending on the type of printer and format.

Most systems are capable of handling up to six part forms in widths from 4 in. to 18 in. A single sheet capability is also available on some units. This allows the same unit that handles the continuous form printout to microfilm general accounting records and other single sheet material.

The printout is taken from the printer and placed in the POM unit where it is fed by either a pin drive or drive rolls past a rotary camera with a single or dual lens that exposes one 35 mm or two 16 mm films at the same time.

Some systems with interchangeable cameras can use either one 35 mm or two 16 mm films. The operator feeds the paper into the unit at the start and pushes a button as the exposure is automatically controlled in relation to the speed. The film is then processed in-house or sent out for processing.

The reduction ratios vary from 16-1 to 34-1 with other reductions available as special options. Using the 34-1 reduction ratio and 2-1/2 mm film, a mile of paper work can be placed in one cartridge 4 in. by 4 in. by 1 in. with even the simplest retrieval system providing much greater accessibility than existing hard-copy storage systems.

Copy Is Coded

While the copy is being exposed a blip or a coded number is placed on the film beside each frame. It is possible in some units to have both the blip and the coded number placed so that the retrieval system can grow in sophistication without requiring reprocessing of existing microfilm.

The simplest retrieval method is to use the coded numbers and have the POM operator keep an index of reel and number for specific information.

Through the use of this index, material can be reviewed at a later date by picking the right cartridge and running this on any viewer or viewer-printer. This method is relatively simple and is all that is required at many installations.

The next step up in retrieval is a viewer-printer that automatically will find the sheet required by counting the blips that have been placed on the film.

A great deal has been said about microfilm systems not being justifiable based only on reduction in storage space. But with the lower cost of POM systems, $3,500 to $5,000, storage cost is not the only justification, but certainly a valid one.

Richard A. Thomson is general manager, Advanced Terminals Inc., Herkimer, N.Y.

TTY Winder Avoids Printout Pile-Ups

JUPITER, Fla. – Logic Systems Corp.'s new Model 2012 paperwinder winds paper as it feeds from a teleprinter, eliminating paper pile-up behind the machine.

It can be mounted directly on a Model 28 or 35 Teletype in minutes, using only a screwdriver, the firm said. Adapter plates are available for mounting on other

2012 Paperwinder

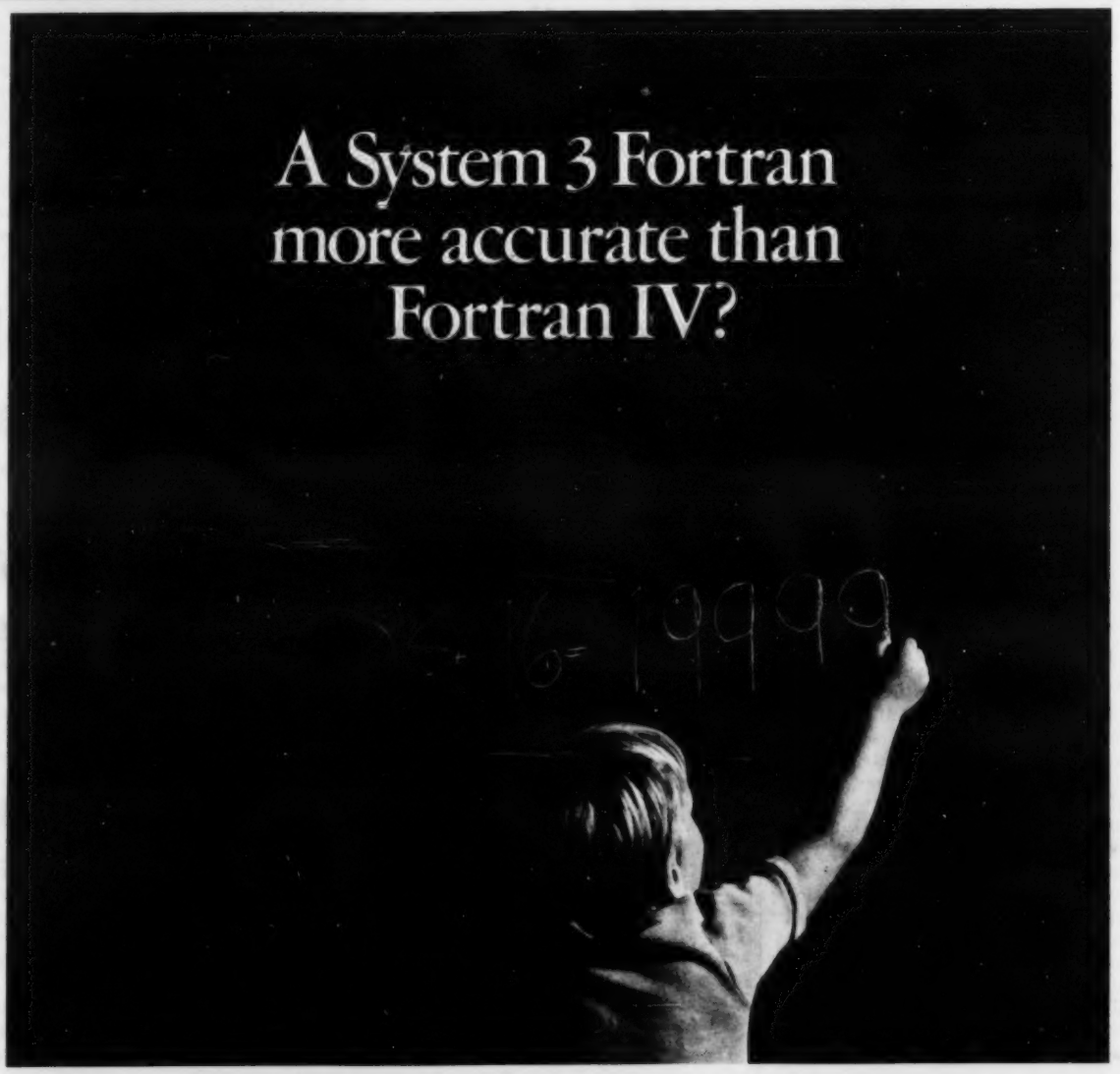
teleprinters such as Model 33.

A specially designed low-torque gear motor provides a constant light pull on the paper, eliminating the need for paper-tension sensing devices. The Model 2012 is built for continuous duty and accommodates a full 5 in. diameter roll of 8-1/2 in. wide paper. Single unit price is $74.50. Special units to handle 11 in. wide paper are available. The firm is at 1567 Cypress Drive, 33458.

T/S Net to Aid Consultants

CW European Bureau

LONDON – Chemical Bank is planning to use Honeywell's European time-sharing network to expand its computer-based financial consulting service into Europe. Four European countries now have local access to the London end of the Transatlantic Mark II network.



It's called PIFORT.

Binary is a beautiful thing except for the fact that it tends to give "more or less" kinds of answers. But PIFORT for System 3 is written in decimal. You add 0.1 and 1.9 and you get 2. Not 1.9999999 etc., which is close but not accurate. Of course, that's not the only thing about PIFORT. For openers, it's the only FORTRAN available for System 3 on immediate delivery (IBM's will not be available until August of 1972). It doesn't require a disk which IBM's will. It's compact, allowing for the solution of large problems in a small space.

OK. Who needs a FORTRAN on a System 3? Well, if you have engineers or technicians who are buying time from service bureaus or running up bills on a timesharing terminal, then the $100 a month that PIFORT costs actually becomes a saving. Try it for thirty-days absolutely free.

And remember. Close only counts in horseshoes.

For your thirty-day free trial or for more detailed information, just drop us a line. We can turn your System 3 into a scientific computer almost immediately.

```
C     TRY THIS TEST WITH YOUR FORTRAN
C
      INT(X)=X
      WRITE (3,200)
200   FORMAT (39H1 DOES YOUR FORTRAN GIVE THESE ANSWERS?)
      I=INT (0.4 + 0.6)
      J=INT (0.1 + 1.9)
      K=INT (0.2 + 1.8)
      L=INT (0.3 + 1.7)
      M=INT (0.4 + 1.6)
      N=INT (0.5 + 1.5)
      WRITE (3,300) I,J,K,L,M,N
      STOP
300   FORMAT  (15H0   0.4 + 0.6 =,I2,/15H  0.1 + 1.9 =,I2,
     1/15H    0.2 + 1.8 =,I2,/15H    0.3 + 1.7 =,I2,
     2/15H    0.4 + 1.6 =,I2,/15H    0.5 + 1.5 =,I2)
      END
```

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WHO IS THE UNKNOWN GIANT IN COMPUTER PRODUCTS?

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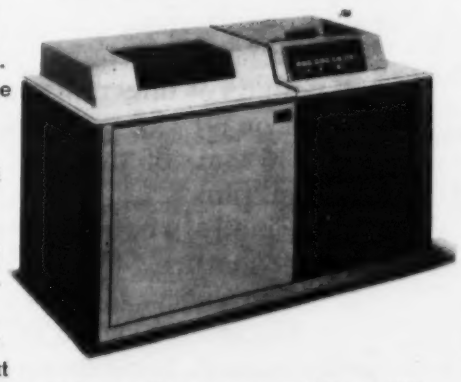

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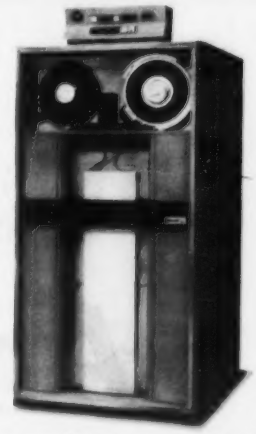

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CALCOMP

COMPUTERWORLD

1971 Computer Output Microfilm Supplement

September 29, 1971

COM Acceptance Tied to User's Technical Knowledge

CW: What is the main advantage of a COM system that computer users should consider?

Askanas: Computer users should always consider the ease of operation and installation. EDP managers and a lot of users are not willing to accept different technologies. Maybe that has been one of the hesitancies in a broader acceptance of COM.

CW: Once I make a decision as a user to begin a COM operation is it difficult to get qualified people to run my system and utilize it effectively?

Askanas: In general, the EDP manager has to become conversant with microfilm information systems.

To determine the current status of COM and its relationship to DP users, CW talked with Charles Askanas, President of Quantor Corp., Cupertino, Calif.

CW: What kind of educational outlets are there that are set up to provide that kind of instruction and training?

Askanas: It would depend on the COM manufacturer, and how much support he provides.

CW: Are you saying that the physical requirements necessary to operate some of the COM systems which require plumbing and other strange environments are not native to the EDP center?

Askanas: Right. You talk to the EDP manager about microfilm and he pictures a guy in an apron in a dark room with a red light swishing stuff through a hypo tank. I think it's important to get past that hurdle. Two education jobs are required of the manufacturer. One is making it easy for the system operator himself to produce dry, completed microfilm . . . and to make copies. Two, is to provide display ready microfilm with the index and retrieval system [that's software and hardware] that make it possible for the end user to integrate that microfilm information into his management information system.

CW: What type of users are in that environment today?

Askanas: I would say that would depend completely on the installation, but I would characterize a customer as having the equivalent of a 360/30 or above. He would have one of two requirements. One is a large file in which file integrity is important, and a fairly small distribution. In that case he would use roll film. The other one would be a small report where a large distribution is very desirable. A 200 page report that he might want to make 500 copies of for distribution, and then in that case microfiche is desirable.

CW: Do you find that many prospective COM users are people that have physically outgrown their mountain of paper storage, or is that just the secondary benefit from COM that you cut down on the amount of space you need to store your records?

Askanas: I think that is a secondary benefit. My own feeling is that that has been widely misunderstood. I don't see COM as an archival storage medium.

CW: Why is that?

Askanas: Because most of the applications are active files and active information distribution. COM has the advantage of archival storage, but I think the largest opportunity lies in active reports, distribution, and active file inquiries.

CW: So is this an incorrect image on the part of the computer user? Do you think that analogy in the mind of the user is perhaps holding him back from investigating COM for immediate updating and active file maintenance?

Askanas: Exactly. For example, I found a lot of computer users store tape more than they store paper. I think that anytime you go into a large library, it is a tape library. I say COM would compete with storing tape for a couple of reasons. When you generate a tape and put it in storage, you have a problem when you want to find out what's on that tape. You have to find your operating program, reschedule time back on a computer, and go to a print. Now, if you store microfilm instead of the tape, it is human readable. You don't have to go back to the computer with it. Another thing is that tape prices are changing pretty fast. We buy tapes now for $12 or $15 a 10-1/2 in. reel. When it is recorded a tape may have a value of $40 including computer time. But a roll of microfilm of 2,000 pages including materials and recording time, etc. would be a dollar or two.

CW: But are you actually saying that it is cheaper to have a COM file than a tape file?

Askanas: Absolutely.

CW: And is that across the board?

Askanas: Absolutely. The only time it would be cheaper to have a tape file is if you want to have an interactive file where you always want to go back in with a tape. Or have some type of disk/tape operating system.

CW: Now how about the problem of going back from COM onto tape for your update? Is that computer input microfilm and is that an expensive process?

Askanas: I think now it is. There are about three computer input microfilm systems available today.

CW: Is that an area of potential growth, or interest with the users?

Askanas: Yes. As a matter of fact I believe very strongly that when computer input microfilm becomes inexpensive it will totally replace tape.

CW: When is that going to be?

Askanas: Not too far off.

CW: Why are these systems so expensive and relatively slow in their scanning rates? Is that just a function of the technology?

Askanas: Technology, no. We have a way with Light Emitting Diodes, but nobody has done it.

CW: Would the cost come down?

Askanas: I think that the under $50,000 computer input microfilm system is very feasible.

CW: Is this a process of education to make a user aware that once he's on microfilm he's not in a deadend situation?

Askanas: Yes, I think that's a matter of user education. I would say that by 1975, microfilm will compete with mag tape as an active information operating medium.

Careful Planning Can Cut Costs of COM

By Mark Wood

Special to Computerworld

The selection of a COM system should be conducted in a very thorough manner by the prospective user. Attention to detail prior to installation can save time and money.

After identification of his DP problem – be it storage, computer time, mailing, turn-around, or retrieval – there are three areas the user must study in addition to the economics.

Hardware

Hardware should be analyzed according to four characteristics.

Configuration – What particular features and/or options are required for the specific application desired, i.e., a phase encoded tape unit may or may not be necessary for compatibility with the in-house computer or precise alignment may be required for an accounting application having critical preprinted forms. The potential customer should be sure that the option being purchased is absolutely required, while also insuring that a necessary option is not overlooked.

Reliability of Equipment – The history of the machine's performance should be investigated by calling or even visiting one or more "installed accounts" and discussing machine reliability with as many other "owners" as possible.

On-Line vs. Off-Line – In evaluating off-line vs. on-line capabilities, the potential user should analyze such requirements as scheduling, system loading, and present experience with on-line systems before making his decision. There are advantages to both systems, depending on the specific applications, and neither one should be ruled out without investigation.

Microfiche vs. Roll Film – The indexing capabilities inherent in microfiche are ideal for fast, efficient data retrieval. A file can be more readily updated, and cartridges are eliminated with fiche. All of these factors have led to an increasing number of new applications in COM to be placed on microfiche. However, roll film is still considered invaluable for certain applications.

Software

Often overlooked, software plays an increasingly important role in the success of COM applications. Thus, the availability and flexibility of software should be seriously analyzed.

Availability – The COM manufacturer should offer the necessary software to title and index microfiche and to convert line print data into COM data taking maximum advantages of the hardware.

Computer Overhead – The requirements of the host computer must be analyzed. If core is at a premium, software efficiency will make a significant difference in implementation.

Computer Compatibility – The software must be compatible with the customer's computer.

Application Coordination – What software technique is best suited for the application? There are logically three approaches to creating COM data on a host computer:

- Post Processing – In this method, a print image magnetic tape is played back through the computer and reformatted for COM.
- Modification of Existing Programs – By linking to provided routines, a second computer pass is eliminated. This method does, however, require a recompilation or reassembly of the application program.
- System Writer – A third choice is a system writer that modifies the format so that it is COM compatible prior to leaving the computer. This method is considered the most efficient in that no program modification or second computer pass is required. System compatibility is the primary criteria that the user should investigate in this instance.

Service Support

If a machine isn't running, all of the above can be discounted. Service should be evaluated on the following criteria:

Availability – How soon a customer engineer can respond to a call should be determined prior to installation.

Level of Personnel – COM employs many disciplines: electronics, optics, chemistry, photography, and mechanics – and individuals schooled in these various functions are not readily available. Two questions should be asked in this regard:

- What is the service training capability of the company?
- What is the average number of years of COM experience of the customer engineers?

Parts Availability – The vendor should provide to the customer a detailed plan for spare and replacement parts.

Mark Wood is Product Manager with Stromberg Datagraphix, San Diego, Calif.

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Computer Input Microfilm

Inputting Data Via Film Draws on OCR Technology

By Daniel M. Forsyth
Special to Computerworld

At a time when COM is gaining rapid acceptance as a data output medium for computers, there is increasing interest in Computer Input Microfilm (CIM).

Essentially, CIM is a technique for inputting data to computers from film rather than from the more conventional data vehicles such as magnetic tape or punched cards. Today, the term generally implies the conversion of alphanumeric symbols to a digital data base (OCR). It is also used to describe the reduction of pictorial information to a form suitable for computer processing. Such data can include halftones, drawings, seismographic records, medical records such as EKG traces, etc.

Today with CIM, the last of the computer bottlenecks are being removed. As COM isolated the output problem, CIM now eliminates the input problem. Only the lack of imaginative applications is limiting the capability of this latest advance.

As a new member of the family of OCR equipment, CIM addresses itself to the problem of automating data input to computers. The magnitude of this problem is impressive. There are approximately 30,000 computer installations in the United States, many with multiple computers. Feeding these machines the data they require involves nearly 700,000 manual keystroke stations, preparing between five and ten trillion characters annually.

Most OCR machines are designed to read from paper documents. The use of film as an alternative input medium is attractive for a number of reasons. Paper handling equipment is susceptible to jamming, mutilating documents on occasion and causing expensive down time.

Film transports never jam, while transporting document images much faster. The continuous control provided by film handling equipment facilitates asynchronous reading, allowing more time to be spent on degraded images and improving the error rate.

Documents of virtually any size may be accommodated, and may be intermixed on the film if required. Paper weight is unimportant; in effect, whatever can be filmed can be handled by a CIM system.

Advantages

The advantage of using film as an input medium is related to the general problem of information storage. Many large organizations have the requirement both to read data from and to store documents. As paper storage is bulky and expensive, archival storage is on microfilm.

In this environment, CIM not only utilizes existing film for scanning, but serves also to verify that all documents have been filmed. At the same time, it creates an index of the location of each document image, facilitating future retrieval.

Of particular interest, the increasing utilization of COM is creating a new need – the reentry of COM-generated film into the computer. While reentry of computer-generated data is generally required only infrequently, maintenance of the capability to do so can be costly.

Many organizations currently storing thousands of reels of magnetic tape are beginning to look seriously at COM/CIM systems as a means of reducing expenses. When such voluminous files of data are accessed only infrequently, the advantages of film as a storage medium become very attractive.

Descriptions Not Clear

Conventional OCR equipment is often described in terms of the kind of paper transport included in the system. Thus, there are journal tape readers, page readers, document readers, etc. Such distinctions cannot be made for CIM equipment, as images on film can represent a wide variety of document classes.

Nor are classifications based on recognition capability useful, e.g. stylized font readers, mark sense readers, multi-font readers, etc. Most, if not all, CIM machines can be configured to read any font in virtually any language. Finally, while some OCR equipment is built to read a limited, fixed number of lines from a document in one pass, no such constraints are imposed on CIM systems.

A number of manufacturers are now offering CIM equipment. An overview of a typical system should serve as a general introduction to CIM equipment.

To bring the filmed document images to the scanning station, the system uses a film transport that can advance from one image to the next in from 20 to 50 msec, depending on image size. Once the image is brought to the film gate, its relative orientation on the film is determined, and those areas on the image containing data to be read are scanned.

Scanning is done at a rate of 500 kHz, with each point read as one of 512 possible gray scale values. The gray scale data is automatically stored in core memory at a location designated by the 36-bit control computer. The control computer in this case is a powerful third-generation machine controlling all aspects of the data conversion process.

The gray scale data is converted to a binary image, enhanced to remove noise, etc., and recognition procedures are applied to the image of the unknown character. These functions are performed by a separate computer, the binary image processor.

The recognition process involves image enhancement, feature extraction, and operations performed on the unknown character image with character masks that are stored in core memory. The control computer evaluates the data generated by the binary image processor, maintaining software control of the entire process.

Such software control permits total flexibility with respect to document size, format and font distributions of the input data. Output of the data conversion can be to any standard computer peripheral.

Dr. D.M. Forsythe is vice-president of Information International Inc., Los Angeles.

COM Service Bureau Users Shift Costs And Responsibility to Outside Sources

By James A. Metzger
Special to Computerworld

The choice of a COM service bureau for users is as critical as the decision to adopt COM. Perhaps the most compelling reason for users to get into COM with a service bureau is the unequivocal establishment of responsibility for the COM operation.

COM service bureaus give the user a wide range of advantages which can seldom be matched by an in-house operation. The Service Bureau, both by inclination and economic necessity, will be innovative to a greater degree than most in-house operations. Their clients will be more likely to get the benefits, first, of advances in the state of the art.

COM Service Bureaus are competitive. Even in smaller cities where only one bureau is operating, it must try harder to justify itself against possible decisions to move in-house. This often translates into service extras such as special pick up and delivery arrangements, mail and other distribution accommodations.

Service bureaus afford clients the added economies – above and beyond those inherent in COM – characteristics of high utilization of equipment and personnel.

They make economically feasible the benefits of COM to virtually any application ranging from massive daily output to modest quarterly runs. In this connection, the bureau can readily accommodate such a variety of requirements within a single client contract, a feat which would tax the designer of an in-house system.

Service bureaus provide clients with continuing objective and expert evaluation of system performance and ready counsel when changing requirements indicate revision of system design.

Service Bureau clients run the gamut of business and industry. Financial institutions of all kinds are major users with requirements ranging from the over night demands of paper-besieged Wall Street brokers to savings and loan institutions needing quarterly up-dating of accounts. Banks find COM bureaus especially useful in the handling of stock transfer, trust and mutual funds. The bureaus work extensively with insurance companies handling audit trails, Medicare, mortgage loans and land titles.

As in all new and volatile areas of technology, the COM service bureau field is experiencing the shake out of marginal operators. With each year, however, the good operators grow more sophisticated and competent, increasingly capable of tailoring COM to the needs of users.

J.A. Metzger is Director of Microfilm Services with Kalvar Corp., New Orleans.

Editor's Note
The Computer Output Microfilm Supplement was compiled and edited by CW Technical News Editor Ronald A. Frank.

COMPUTER SERVICES CORPORATION

PRESENTS

INTERCOM

PROVIDING

PROGRAM TO COM COMMUNICATION

INTERCOM is a general purpose external subroutine designed to produce a tape for input to a COM device.

INTERCOM may be used with MICROFILM or MICROFICHE

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INTERCOM provides extensive features for MICROFICHE:
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INTERCOM is available immediately for the Stromberg 4440 and the Kodak COM90 (and is currently in production use on these devices by one of the FORTUNE top 10). Please allow 30 day delivery on other devices.

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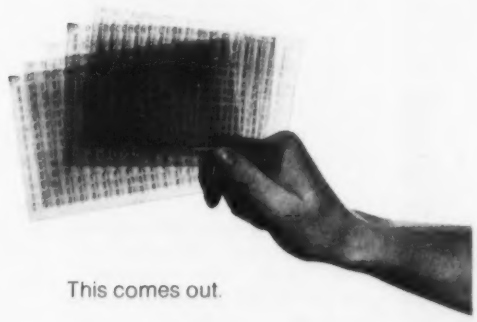

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Silver Halide, Diazo, or Thermal Types

Film Choice Depends on Format, Volume and Facilities

By Raymond L. Miller
Special to Computerworld

All of the commercial COM devices currently produce images on silver halide film. If distribution copies are required, as is usually the case, then multiple copies of the original are prepared by duplicating onto silver halide, diazo or thermal microfilm.

The types of film used depend on such things as format, volume of data, facilities available for processing, simplicity of processing and final usage of the film.

Original COM Films

The exposure source in all commercial COM units is so low in intensity and the allowable exposure times are so short that only silver halide films work satisfactorily. The types of silver films required by the various COM devices vary in several important aspects.

The majority of COM devices used silver films in roll form which are wet-processed – develop, stop, fix, wash – to produce a positive, black letters on a clear background image. These films are capable of providing high contrast, sharp images when properly exposed and processed.

The drawbacks of using silver film are well known, but not easily avoided. A darkroom is required for loading and unloading the camera magazine. Water and drain lines are required for the processor and chemicals are necessary. Maximum processor speed may be as low as 5 ft/min, although processing speeds up to 100 ft/min are obtainable with some equipment.

At least one manufacturer, Quantor, offers a COM unit with integral wet-type film processor. This allows elimination of a darkroom and some of the plumbing requirements but still requires the use of chemical solutions.

The dry-processing (EBR) silver film used by 3M contains the chemicals necessary for developing within the unexposed film.

After exposure, the application of heat activates the developer and produces positive image film. Processing is fast and clean and the COM unit and processor can be placed in a computer environment for rapid access to the data.

If problems occur in the processing portion of the system, the entire COM unit is effectively shut down; with off-line wet processing it is usually not difficult to locate and utilize an alternate processor.

Duplicate Films

Multiple copies can be generated by repetitively running the data through the COM device and generating new silver films.

This procedure is expensive if the data volume is large, so the most common method is to use the original COM-generated silver film as a master and make contact-print duplicates on less costly film such as thermal or diazo.

For working copies, most users find that negative, clear characters on a black background, output is preferable, especially when hard copy must be made from the film.

Low Cost Diazo

Diazo films have long been considered the least expensive method for producing duplicates and raw film costs for diazo are the lowest of the duplicate films.

However, when the peripheral costs of diazo film – ammonia cost, slower duplicating speed or higher equipment costs, the expense of reversal processing the silver master to produce negative duplicates – are added to the raw film costs, diazo duplicates are likely to be more expensive than those made on thermal film.

Equipment costs to produce 16 mm roll duplicates at 200 ft/min are $15,000 to $20,000 for diazo compared with $6,000 for a thermal film. For diazo duplicators, the higher the duplicator speed, the greater the film length required to thread the duplicator; lengths of up to 30 ft of film may be required.

Ammonia required to develop the diazo must be vented through a separate ducting system, and the high pressure cylinders used for the ammonia supply storage are potentially hazardous.

Since diazo film maintains the same photographic sign as the master, a positive duplicate from a positive master, either the original silver must be reversal processed to produce a negative or an intermediate silver must be prepared if a negative diazo working copy is desired.

Thermal film produces a reversal duplicate because small, light-scattering bubbles are formed in the exposed portions of the film. When projected, these areas appear opaque. Unlike silver and diazo films, no chemicals, venting or darkroom are required for processing.

All thermal films are coated on a polyester base which has a much higher tensile strength than acetate, but is more expensive. The high contrast thermal film is ideally suited to COM duplication where only clear characters on a black background are desired.

Raymond L. Miller is manager, technical support at Xidex Corp., Sunnyvale, Calif.

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COM Software Determines Compatibility With Existing CPU Tapes and Characters

By Paul Curtin
Special to Computerworld

There are two distinct types of "COM software." One operates on a host machine, such as a 360, and formats files that are input to a COM unit.

The COM software discussed here operates in a built-in programmable processor or computer that is an integral part of the COM.

The initial cost of a COM system with built-in software capability is normally higher than a hard-wired machine. The user is buying power and flexibility. In choosing such a system, however, he is buying a COM with almost unlimited capabilities.

The COM software makes the unit compatible with all tape formats, carriage controls and character sets, and usually provides instant compatibility with the user's present host computer system. He can run his tapes on the first day.

This saves considerable start-up time, reprogramming, testing, procedure changes, and relieves the work load on his large computer.

The general types of programs available break down into six areas: print tape processors; graphic format processors; COM simulators; plotter simulators; retrieval programs and special application programs.

Print Tape Programs

Most major computer manufacturers have at least one, and usually more, standard print tape formats.

IBM, for example, has four standard file formats, three carriage control codes, and at least two character sets, all of which are available on a 360 system. Honeywell, G.E., Univac, Burroughs, NCR and others all have standard but differing tape formats.

The print processor software makes the COM a compatible peripheral with not one but all print tape formats. A COM with a built-in processor can easily have programs added to its library to accommodate any new formats.

The availability of a processor and a CRT with graphic capability, a minimum of point plotting, has led to two distinct kinds of COM graphic output software systems.

The first type, a meta language processor, accepts a unique tape format that consists of graphic orders. The system is a combination of a host machine graphics package, usually a set of Fortran subroutines, a meta language tape format and a meta language processor on the COM.

The second type of graphics program uses the COM as a complete system. It accepts hand-formatted data and creates a graphic output on film. An example would be a program that accepts values over a teletypewriter and scales, draws, and labels graphs on film.

As with most types of hardware, major advances have been made in quality, throughput and price/performance of COMs over the past few years.

The user of a hard-wired system must, by necessity, format data specifically for his COM.

Manufacturers of programmable systems offer packages that will accept the tape formats and simulate the hard-wired machine, allowing the user to upgrade his system without reformatting.

Simulators are available for most off-line, hard-wired COM systems. Most simulators match the throughput of the original machine and in some cases improve upon it.

Plotter Simulators

Users of pen plotters have found great advantages in shifting their output from paper to microfilm. The COMs run up to 100 times faster with simulator programs and produce more easily duplicated output.

The programs accept tapes compatible with the pen plotters, scale the information to a frame size on film, and create the exact output as previously provided by the plotter.

The most striking example of the usefulness of COM software is in providing programmed retrieval systems from unformatted tapes as in fiche with titles and indexing.

A COM microfiche software package written for an IBM 360 accepts print tapes as input and creates a formatted output tape containing title and indexes, which is then run on a COM.

The 360/40 time required to format the tapes ranged from 60- to 90 seconds per fiche. When the job was rerun on a COM unit using the original print tape as input, the additional time to create the same titles and indexes was 20 seconds per fiche.

The ability of COM to format and create retrieval information for unformatted tapes promises to save the user time and expense in eliminating the extra host machine run.

The possibilities of using the processor to enhance the retrieval speed of the output are unlimited. The availability of multiformat cameras and software controlled COMs has opened the door to an unlimited array of formats on film.

Fiche in any array desired and in any sequence (i.e. by row, by column) can be produced by simple parameters to the control program. Software control of the camera movements makes 3-, 4- or even 5-up on 35 mm film a simple job.

Two-up on 16 mm and varied sizes of fiche are now available. The software controlled camera has unlimited format possibilities.

Special Applications

A COM with a built-in processor is not only a peripheral, but is a total system in itself. The processor can be supplemented by write tape drives, card readers, high-speed tape readers and any other standard type peripheral.

Special applications can be programmed to meet each customer's requirements.

The use of the COM to prepare masters for high-volume print jobs where turn-around time and cost improvements are significant is an area just being opened.

COM software capabilities provide a flexible system which can easily accommodate widening customer applications for computer-generated microfilm.

Paul Curtin is manager of programming at Beta Instrument Corp., Newton, Mass.

More than 50% of all new COM installations since October, 1969, have come from Memorex.

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We could explain that our specialty is data processing, not just film or electronics. So we understand the kind of system that works best for data processing installations.

All those things would be true. But it would be easy for you to ignore them as just advertising talk.

After all, this issue is filled with ads from people who say their COM equipment is the world's best.

So it's easy to ignore advertising claims. But if you're in data processing, it's hard to ignore the data.

If you want to know which COM system is really best, go back and read our headline again.

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Don't Film, Store, and Forget

Efficient File Maintenance Holds Key to COM Success

By Earl P. Bassett
Special to Computerworld

The growing acceptance of computer-output-microfilm and the rapidity with which this procedure generates hundreds of feet of microfilm make efficient indexing and file maintenance important. Because COM units operate at speeds 25 times faster than impact printers, data processors are finding savings in valuable computer time.

Another factor which greatly increases the efficiency of COM, or any kind of microfilm system is the ease with which it can be duplicated. High speed duplicators make it possible for branch offices and other outside locations to maintain duplicate sets of files – greatly cutting down the frequency of look-ups at the central location.

Now that COM has made it possible to generate reports and other data on microfilm more rapidly than on paper, entire files may be updated, duplicated and distributed weekly or even daily.

It has been a common procedure in many firms to microfilm, store – and forget – files which have served their usefulness but still need to be available "just in case."

Today, however, many educational, industrial and governmental organizations are using microfilm for active files and are experiencing savings not only in space but also in time and money as well. They have found that information on microfilm is easier to retrieve and to update than on paper.

No One Right Way

As with many things, there is no one right way to set up and maintain a microfilm file for maximum efficiency. Because there are three basic microfilm formats in wide use today for active files, it is important to decide which one will best suit a given need.

It should be emphasized, however, that if indexing and filing procedures are poor to begin with, it will be just as difficult to locate a given frame of film as it was to find a specific piece of paper.

The best known form of microfilm is the traditional 16 mm roll. This format lends itself well to information that is organized in a particular order – alphabetical or numerical. Generally, basic indexing information is written on the film box, enabling the operator to quickly locate the proper roll of film.

An extension of this format finding widespread acceptance today is the microfilm cartridge, which contains 16 mm film. The advantages of this modification are that the film is never handled, is automatically loaded onto the microfilm viewers and reader-printers and indexes are much more exact. Using a reader-printer, film can be quickly indexed at 20 different points using an easy-to-read odometer on the machine.

Cards With COM

A now familiar form of microfilm developed since World War II has proven itself almost as popular as roll film. It is unitized 35 mm film mounted on a standard data processing card. This combination of card and film is currently called an "aperture card." The film might contain the graphic data needed to build an airplane part, a business or hospital record or a miniaturized X-ray. The card, which can be key-punched or typed on, identifies the film for easy filing and retrieving.

In situations where one can't wait for film to be processed and mounted into cards, processor-cameras are available which produce a completely processed camera card just 40 seconds from time of exposure.

The aperture card is extremely popular in situations where files are constantly being updated or duplicated. Because duplicate cards or full-sized paper copies may be produced in a matter of seconds, the original card need never leave the immediate area where it is filed.

Engineering firms have found this system a boon compared to mailing, copying and distribution of bulky engineering drawings.

As in the case of the microfilm roll or cartridge, aperture cards may be filed in much the same manner as paper – in only about 2% of the original space. Retrieval may be manual or automated, depending on the size of the file. When automated procedures are used, a plain data processing card, called a slave card, is usually key punched with the same information as the aperture card and sorted in standard card sorters.

This makes possible rapid random searches without disturbing the individual aperture cards. Special card sorters are available, however, which handle the actual aperture card in cases where this is desirable.

Microfiche Files

The third basic format in common use is actually an extension of those already discussed. Microfiche consists of rows of images on a 4 by 6 in. sheet of acetate. Although there are elaborate cameras available which produce these images directly on the acetate, a more common procedure is to adhere strips of 16 mm or 35 mm film to the sheets. At the standard reduction ratio of 24X, 90 images may be placed on one sheet of microfiche.

The advantage of microfiche has been in the ability to keep a large number of pages or documents together. Catalogs, journals, computer-generated reports and library research materials are commonly placed on microfiche. The microfiche jacket is quite similar to standard microfiche except that 16 mm and 35 mm film are inserted into sleeves of an acetate jacket – thus facilitating additions or deletions from the file.

Filing and retrieval of microfiche is exactly the same as with aperture cards except for automatic retrieval methods. Space is provided for typing index information at the top of the fiche.

Obviously, a major factor in the increased efficiency of microfilm over paper is that the files are consolidated to such an extent that they can be at a person's fingertips at all times. Most of the indexing and filing systems used for hard copy files apply very well with microfilm.

E.P. Bassett is marketing director of the Microfilm Division, 3M Co.

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The Professional's Viewpoint

Rights, Duties Need Clarification

This week's page takes up the question of what we see as the rights and duties of our profession. Ronald G. Osborn, CDP, believes that every DP manager should have the right to review correspondence that blames the computer for various things, even when the correspondence is issued by other departments. Clearly, he feels that the computer is often made a scapegoat, and that this should be avoided.

But the suggestion of whether he should have the right to review such material matches in with some of the response to an earlier article on this page.

The article reviewed the new IRS regulations regarding the retention of tape and disk files and questioned their usefulness and practicality. Since this was published, a number of people have queried as to just what, if any, is the duty of data processing professionals in this area. Do they have a duty to know the data processing implications of new laws, etc., or do they simply have the duty to do what other departments tell them to?

How to Participate

"The Professional's Viewpoint" page is cosponsored by the Society of Certified Data Processors and *Computerworld.*

Professionals may contribute articles, or respond to articles, by writing to: The Professional's Viewpoint, Society of Certified Data Processors, 633 Central St., Framingham, Mass. 01701.

In checking the codes of the various professional computer societies, no guidance on this point could be found. This opens up the matter for clearly necessary discussion now that laws are being passed which may have implications that can only be noted by a professional data processor.

There appear to be three major cases:

- Where the law says that some piece of data processing shall be carried out in a specific manner (such as billing under the Truth in Lending Act).
- Where the corporation stands to lose some valuable rights, even though the law is not specifically broken (as in the IRS case, where the result of failure to be able to produce the necessary tape and disk files could result in additional taxes having to be paid).
- Where while there is no specific law being broken the information provided by data processing is materially false (as when a bill is sent out with incorrect information on it).

Unlike the case put forward by Osborn, these cases all fall within the area of the data processing department itself. Together they provide food for thought.

So that current professional opinions on this matter may be sampled, please complete the questionnaire on this page and mail it to: Professional's Viewpoint, Computerworld, 797 Washington St., Newton, Mass. 02160 – A.T., Society of Certified Data Processors.

Professional Rights and Duties Opinion Questionnaire

Please circle your answers

1. Does a DP manager have the right to review other departments' correspondence which "blames the computer" for some action? — Yes / No / Other

   If so, to what extent should a DP manager press to obtain this right? — Single Protest / Repeated Protest / Resign

2. Does a DP manager have the duty to know whether any of his applications are breaking the law? — Yes / No / Other

   If he does know that an application is breaking the law, to what extent should he press for the law to be obeyed? — Notify Mgt. / Protest To Mgt. / Refuse To Run / Resign

3. Does a DP manager have the duty to know whether any of his applications are ignoring government regulations, and thus potentially hurting the company's position? — Yes / No / Other

   If he does know that an application is ignoring government regulations, to what extent should he press for the regulation to be obeyed? — Notify Mgt. / Protest to Mgt. / Refuse To Run / Resign

4. Does a DP manager have the duty to know whether any of his applications are providing inaccurate information? — Yes / No / Other

   If he does know that an application is providing inaccurate information, to what extent should he press for the information to be made accurate? — Notify Mgt. / Protest To Mgt. / Refuse To Run / Resign

Comments and explanations of "Other" answers: _____

Name: _____ Address: _____

_____ CDP Holder? _____ Society Member? _____

DP Should Be Consulted On DP-Related Messages

The following letter is a prime example of a user department's request for the cooperation of it's vendors. To say the least, it is poorly done, and places a blame on DP for "requiring" the vendor to "comply."

Gentlemen:

In an effort to improve the efficiency of our accounts payable operation we are in the process of converting to an automated system.

The system dictates that we assign a unique identification number to each of our vendors. In compliance with this requirement, we have elected to use the "Dun's" identification on your files. As yet, you are not displaying it on your invoices. It would benefit us greatly if you could show this number on your invoices.

Every DP manager should insist on reviewing such correspondence before mailing. – Ronald Osborn, CDP, DP manager.

He Objects to Objection

John C. Crook's statement [Young Man Objects, CW, Sept. 15] typifies much of the problem present in DP today.

Would someone please explain to him that it is the DPMA examination which will qualify applicants and not a dirty, old piece of parchment from Podunk U. – Hillyer Senning, Technical Marketing.

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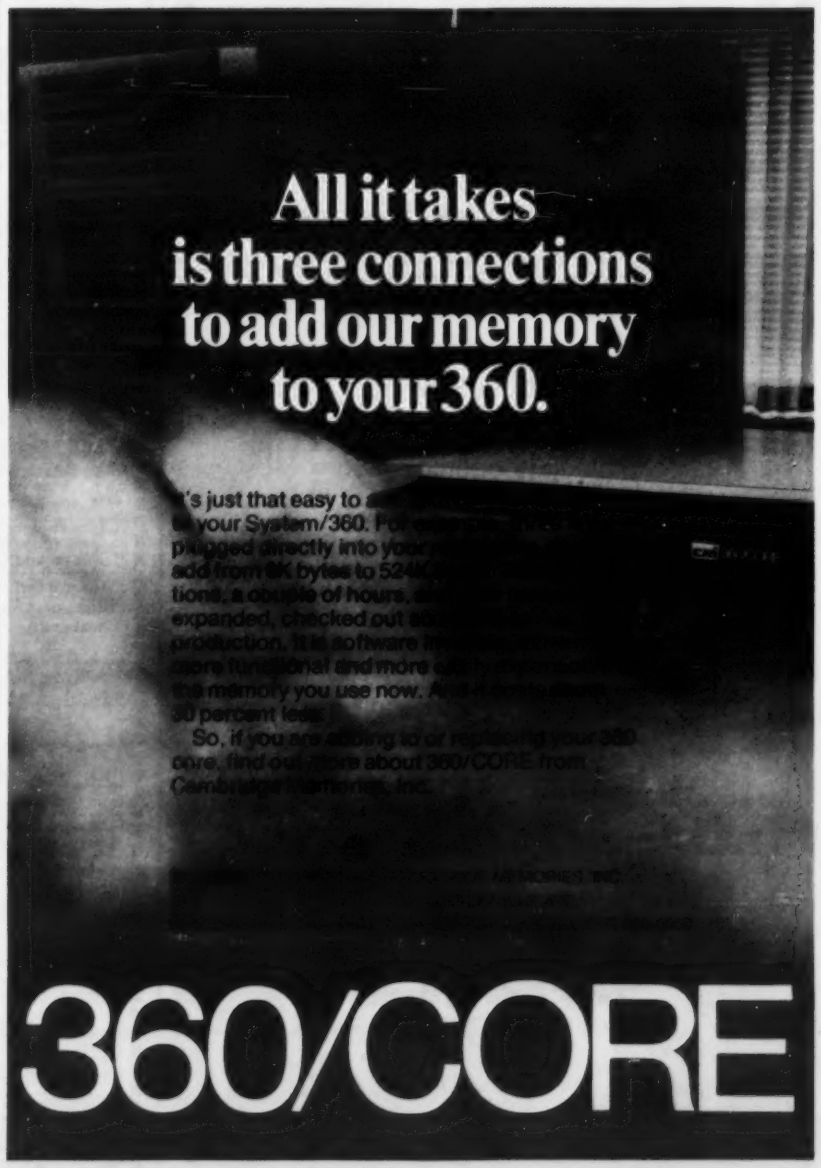

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	2821-1

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Sarnoff Speaks

Acquisition Rumors Abound as RCA Nixes Computers

By E. Drake Lundell Jr.
CW Computer Industry Editor

NEW YORK – After more than 15 years in the business, RCA gave up the general purpose computer ghost on Friday Sept. 17, almost a year to the day from its introduction of new systems designed to compete head on with IBM in an effort to become number 2.

Within a week of the announcement there were reports that several firms were actively interested in purchasing the division and keeping it in operation.

Among the possible firms mentioned among trade sources after the announcement were Memorex, Westinghouse, Control Data and Honeywell.

The firm's decision to drop out of the mainframe business, announced by Robert W. Sarnoff (complete text on page 34), chairman and chief executive officer, could result in a pre-tax write-off of up to $500 million and an after tax write-off of $250 million, making it one of the largest write-offs in history.

Initial industry reports indicate that IBM will probably be the biggest gainer by the demise of RCA – unless another manufacturer can buy the Computer Systems Division at an extremely attractive price.

Sudden Moves

The suddeness of the move, however, indicated to many that RCA had been unsuccessful in efforts to peddle the division to others in the mainframe business.

Both Univac and Xerox Data Systems reportedly had been negotiating with RCA to acquire the division before the announcement.

The move also raised doubts about the ability of firms to compete against IBM in the business. RCA was the 21st largest industrial company in the country in terms of 1970 sales and its defection from computers follows that of GE – the fourth largest concern – by just over a year.

In the announcement, Sarnoff said he had directed Anthony L. Conrad, RCA president and chief operating officer, "to develop comprehensive plans for . . . the sale or other disposition of our mainframe computer business."

RCA Chairman and Chief Executive Officer Robert W. Sarnoff announced plans to drop computer operations. A year ago he said that RCA would become number 2 in the business.

RCA dropped out of the business, Sarnoff said, because studies indicated that it would have to invest an additional $500 million in the business between 1971 and 1976.

In addition, he said the firm would concentrate future computer efforts in the development, manufacturing and marketing of "specialized data communications systems for application in such areas as government and defense, communication networks, and specially designed business systems." [See story this page.]

He also said the firm would continue its "expanding third party maintenance program for computers and other types of sophisticated electronic equipment" through the RCA Service Co.

Industry reports indicate that L.E. Donegan, Jr., vice-president and general manager of the computer systems division, has been given 90 days to find a buyer for the unit, or it will be eliminated entirely.

Lay-Offs Started

While the firm has already started lay-offs of hourly production line employees, it was unofficially reported that professional staffers will be kept on the payroll for at least 30 days – so that if the division is sold there will be bodies to go with it.

The layoffs have affected 2668 workers: 427 at Marlboro; 844 at Palm Beach Gardens, Fla.; 485 at New Jersey plants; 46 at Needham, Mass.; 96 at Lewiston, Me.; and 670 from the field force. And 800 employees have been furloughed at Palm Beach until Sept. 30.

Altogether, the division employs somewhere between 10,000 and 12,000 workers and industry sources said that as many as 70% could be laid off.

The main asset of the division is thought to be its customer base, the present installations in the field. Most industry sources put that base at around 2,000 installations, but RCA users aren't notoriously loyal to the product and so the base is less valuable than the numbers would indicate.

The other major assets of RCA would be a one-year-old line of products and the RCA technology, but most other computer makers also have new product lines and the RCA technology is not seen as a great attraction for most potential buyers.

Most of the mainframe makers said the move would have little effect on their business, since they were not often in direct competition with RCA.

At Univac newly elected President G.G. Probst said "Univac has been watching the RCA marketing strategy with great interest over the last several years and we could not see how a major company could succeed without making very large investments and suffering continued substantial losses for many years."

He stated that Univac was not particularly surprised at the RCA move.

Most industry sources noted the RCA thrust in the past year had been aimed squarely at either present or potential IBM customers and without the competition IBM should pick up a few more orders.

Another reason the move was seen as a boon for IBM and potential trouble for other mainframe makers was that users now might be wary of straying too far from the IBM fold.

Components and memory suppliers also received bad news as RCA went down the drain, since RCA purchasing agents were busy sending telegrams to all suppliers canceling all orders.

It does seem clear, however, that IBM is the only mainframe maker that stands to benefit substantially from the RCA decision, but the industry giant could easily lose more than it could gain if the RCA defection causes the Justice Department to vigorously press the antitrust suit against IBM.

Defunct Division Seen With Little Role In Plans to Enter Data Communications

By Ronald A. Frank
Of the CW Staff

The announcement that RCA will emphasize the area of data communications will have limited impact on the terminated Computer Systems Division.

If the company gives top priority "to the organization of a specialized effort in data communications," as directed by Robert W. Sarnoff, it will probably have to draw on the experience of RCA's government and service divisions.

RCA's most ambitious communications efforts date back to the early 1960s when it developed the Autodin system for the Department of Defense. Although RCA equipment was later replaced with IBM processors, the defense systems division developed a very advanced capability in merging several types of voice and data capabilities into one system.

Since then data-oriented applications, particularly in the Computer Systems Division, have been relatively scarce. Even in the time-sharing field, few users of RCA equipment have been successful. An industry observer told CW that "not one commercial time-sharing company is now doing well with RCA systems."

Any communications capability that is developed will probably draw on the RCA Service Co. Based in New Jersey, the service company has extensive experience in the maintenance of non-RCA terminal equipment. Much of this equipment is operating with on-line data applications. In addition the service company has experience in mobile and other non-computer communications servicing that might apply to building up a new effort.

If RCA processors were to be modified for communications use, the probable application would be as front end processors using modifications of the OS/70 Communications System. It is believed that few users currently have either Spectra or the later RCA series systems operating in data-related applications.

Market Reacts Positively To RCA Computer Decision

By a CW Staff Writer

NEW YORK – The stock market reacted enthusiastically to the RCA announcement that it would no longer compete in the general purpose computer market, boosting the company's stock almost 5 points (between 15% and 20% in value) in the first two days of trading after the announcement.

Even though the one time charge that could reach up to $250 million will result in a "substantial loss position for this year," most investors seemed to believe Sarnoff's statement that discontinuing the computer operation would have "no material adverse effects . . . in future years."

"In 1972," Sarnoff added, "with the bulk of our computer losses behind us, we expect the decks to be cleared for a resumption of vigorous profit growth."

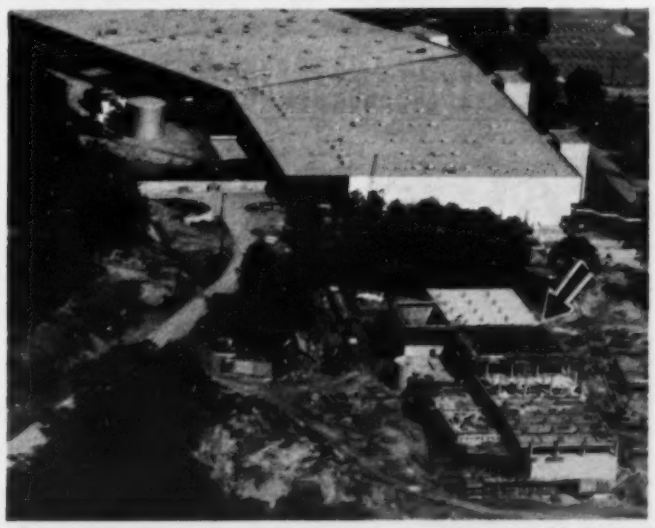
And that could well be the case. The loss can be used to exempt future earnings from taxes, i.e. up to $250 million in future earnings will be tax exempt if a loss of that size is actually taken this year.

In addition, RCA will still be receiving some revenues from computer equipment that is still out on lease.

Industry estimates indicated that RCA is getting about $12 million a month from present computer lease customers or $144 million a year.

Even if erosion of its base sets in (which it will), it is likely that RCA will still have computer equipment on lease for several more years – and that lease revenue will be almost all "gravy" with the elimination of marketing and research expenses.

Therefore it is probable that RCA could make over $100 million a year in revenues and most of that would be placed directly in the earnings column for several years after computer operations are discontinued.



RCA executive offices building under construction in Marlboro, Mass., (arrow) may be casualty of closings. RCA peripheral production plant in background was just completed this year. *Marlboro Enterprise* Photo.

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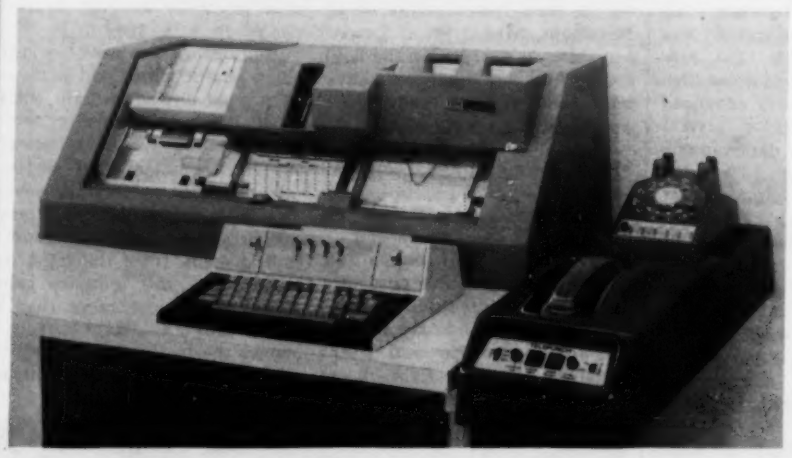

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Sarnoff Statement

The following statement was issued Sept. 17 by Robert W. Sarnoff, Chairman of the Board and Chief Executive Officer of the RCA Corporation.

Today I submitted to a special meeting of the RCA Board of Directors a proposal calling for a fundamental reorientation of RCA's efforts in the computer field. This proposal has been endorsed unanimously by the Board of Directors and will be implemented as rapidly as possible. It involves three key decisions:

1. For RCA to withdraw from the general purpose computer business. This means the discontinuance by RCA of the manufacture and marketing of general purpose central processors, commonly known as main frame processors, and related peripheral equipment.

2. For RCA to concentrate its computer efforts in the development, manufacture and marketing of specialized data communications systems for application in such areas as government and defense, communications networks, and specially designed business systems. These are areas where the company possesses great technological and marketing skills.

3. For RCA to continue its expanding third party maintenance program for computers and other types of sophisticated electronic equipment. This is the responsibility of the RCA Service Company.

These decisions are the outgrowth of intensive studies undertaken by RCA's management of the changing conditions in the computer industry and of the company's prospects for profitable participation in it. These studies have shown that the main frame business, which comprises the bulk of today's computer industry, will continue to grow but at lower levels than previously projected. The severe pressures generated by a uniquely entrenched competition will correspondingly intensify.

For RCA, this outlook means an attenuated timetable for achieving profitability in the general purpose field, coupled with the requirement of a massive infusion of additional capital – probably in excess of $500 million between 1971 and 1976.

Conversely, the emerging specialized computer business in data communications and information processing, in which RCA has a great depth of experience, does not require a substantial commitment of corporate resources or a protracted lag time before profits can be realized. Nor does it compel the large marketing and engineering organizations associated with general purpose computers.

With the concurrence of my associates in management, I determined that the price was simply too high for RCA to continue in the production and marketing of main frame computers. I concluded that it would penalize other RCA operations which are growing vigorously but which could be weakened if the general purpose computer effort siphoned off a disproportionate share of our technological assets, our cash, and our skilled manpower. It would also place a continuing burden on our shareholders for a further period of computer loss years stretched out beyond our earlier projections.

Preliminary estimates indicate there will be an extraordinary one-time charge for 1971 that could reach $250 million after tax. Although this will place RCA in a substantial loss position for this year, no material adverse effects from this action are anticipated in future years. In 1972, with the bulk of our computer losses behind us, we expect the decks to be cleared for a resumption of vigorous profit growth.

I have directed Anthony L. Conrad, RCA President and Chief Operating Officer, to develop comprehensive plans for the immediate implementation of the Board's decisions. These will include the sale or other disposition of our main frame computer business, the organization of the specialized computer effort in data communications, and the reassignment within the company, insofar as feasible, of personnel in the existing Computer Systems Division.

I am writing to the head of every company or agency owning or leasing an RCA general purpose computer. I am assuring them that the company fully intends to fulfill all its contractual commitments to them. I would have preferred to have RCA officials contact each of our customers personally, but the need for prompt public disclosure of the Board's decisions made such a course impracticable.

RCA has been in the computer business for nearly two decades. The decisions taken today will assure RCA's continuance in this still vigorous technology – but on a more specialized basis and without the requirement of continuing huge capital outlays that has discouraged any major company from entering the main frame field since 1962.

I believe the result will be a greatly strengthened RCA, its financial needs moderated, its technological skills marshalled in support of those company operations that are growth and profit centers today and for the future.

...And A Year Ago

The following statements by both Sarnoff and Vice President L.E. Donegan, Jr., were made a year and two days before RCA dropped out of the computer business. The occasion was the introduction of the RCA 2, 3, 6, and 7 computer systems, where the firm announced its head-on competition with IBM and the goal of becoming number 2 in the computer business.

Sarnoff: "We are determined to attain an industry rank second only to IBM in this country. In order to accomplish this goal RCA is prepared to commit whatever resources are necessary."

He said that the new computer line and new business policies of the firm were a reflection of the conviction that the progress of the computer business in the 1970's would be determined more by the specific needs of the user than by radical changes in the technology.

"Many more such announcements will be forthcoming (from RCA), for we are convinced that success in the computer market is directly related to the range of choices provided to the customer, not only in systems and services but in the arrangements available to him for acquiring them."

Sarnoff said the introductions of the new systems are "the latest, but by no means final, steps in our program to achieve a billion dollar volume and corresponding profit for RCA in the computer market by the late 1970's."

RCA's guaranteed conversion plan, Sarnoff said, "should go a long way toward removing the doubt and hesitation that has so often plagued those who must decide whether to move from one manufacturer's systems to another.

Donegan: "Since users of these machines (IBM 360/30s, 40s, and 50s) constitute more than 50% of all installed third generation computer equipment, we are, in effect, offering a majority of existing computer users a new line of equipment that will enable them to perform more work, faster and more efficiently, at little more than they are paying for their current computers."

Astronaut Tells IEEE Audience...

World Crisis, Progress Brought by DP

By Edward J. Bride
Of the CW Staff

BOSTON – Computer scientists are largely responsible for the troubles of the world, and must therefore "channel our knowledge to solutions," said astronaut Edgar Mitchell last week.

Scientists, especially those working with computers, occupy a position today similar to the nuclear physicists of 35 years ago, many of whom "live in horror" about what they created, he said.

Mitchell delivered the keynote address at the annual conference of the Institute of Electrical and Electronics Engineers (IEEE) Computer Society here.

About 600 scientists and students attended the meeting, only about half those expected and apparently not enough to break even financially, according to conference chairman Dr. Richard Battin of MIT.

"This planet cannot afford another 25 years of runaway technology" like the past 25 years, Mitchell, also an MIT alumnus, said. "Progress in technology creates problems," sometimes more than it solves, he observed.

The pilot of the Apollo 14 lunar module said he is not concerned with computers making servants of man, the popular science-fiction approach to technology, but is worried by a "subtle subservience," such as progress for the sake of progress, invention for the sake of profit, without socially-minded goals.

Emphasizing man's wastefulness of natural resources, Mitchell said technologists must stop pursuing the "archaic " principle of "knowledge for the sake of knowledge," and instead must set goals for the application of science.

His familiar theme took on special meaning when he said the planet looks so "peaceful" from space: "we must make it so."

Mankind is at a junction in the evolutionary process, he said, charging his attentive audience to consider the combined consequences of three sets of developments:

- Science is on the threshold of creating life in a test tube.
- Science is replacing man's "defective" parts with new, and sometimes artificial parts.
- Computer technology is based on duplicating the logical functions of the brain.

Mitchell, a believer in "para-normal events" such as extrasensory perception, said scientists must adhere to their obligation to society and to humanity, to "consider the results of your actions very carefully."

He said the computer industry relates to technology itself much as the steel industry relates to the U.S. economy: without DP, technology could not be where it is today.

Returning to the message of wastefulness, he observed that humanity has nearly exhausted the planet's supply of oil and mercury, and research must come up with new sources of energy.

Another naval officer in attendance, Cmdr. Grace M. Hopper, later said Mitchell, a Navy Captain, should have gone a step further and proposed that science discover a new place for the human race to move.

That was too far for Mitchell, who told CW there are several alternatives right here on earth. One member of the audience noted "energy from sea water" would soon by a reality, and the astronaut observed later that nearly *anything* can be a reality, if the public or the end user is willing to pay for it.

Scientists must stop developing new technologies simply for the sake of payment, he reiterated, and must have viable goals as their driving force.

While the decreased attendance figure, down from last year's 1,000, reflected the persistently bad economy around Boston's famed "electronics row" – Rte. 128 – the elimination of exhibits also was indicative of this mood.

Astronaut Edgar Mitchell told IEEE members that their technological progress sometimes creates more problems than it solves. (CW photo by E.D. Lundell, Jr.)

Battin said he was disappointed that there was no last-minute rush to register, despite original optimism resulting from a relatively high preregistration rate.

Attendees at this IEEE function received a "free ticket" to the more design-oriented Nerem conference for early November. The Northeast Electronics Research and Engineering Meeting, also sponsored by IEEE, will take place in the same locale – the Boston Sheraton Hotel and the adjoining John B. Hynes Civic Auditorium.

New Markets Cause Changes in DEC Business Practices

By a CW Staff Writer

MAYNARD, Mass. – Digital Equipment Corp.'s move into the large computer market with the DECsystem-10 [CW, Sept. 22] does not only call for a change in philosophy at the company, but for several changes in the way DEC does business.

The major changes will come in increased sales and service personnel, increased software research, leasing, and in the used computer market.

The firm is planning to increase its sales and service staff by at least 50% this year alone and to double the number of industry specialists it employs in order to penetrate the new commercial and industrial markets, according to product planning manager Rod Belden.

Vice presidents of the company will now not only be responsible for specific product lines (PDP-11, DECsystem-10, etc.), but also for specific market areas – such as medical laboratory automation and educational systems.

This will allow them to not only view the market vertically across segments, but to zero in on specific market targets and design systems specifically for those marketplaces.

While DEC has not had "much success in the past developing applications software in-house," it will be doing more software development on its own for the new systems, Belden said.

Much of the applications software used in systems in the past has come from the users, and this will continue, he said. But now DEC will develop more in-house capability for software development and will test all user-developed programs in-house.

"Still, I think we will find the most successful [software development] coming when the customer is actively involved in the development program," Belden said, especially now that "we have fairly extensive systems software that is very good."

DEC's new equity lease plan will also represent a first for the company – the first time that it has handled leases on its own. Previously all leases had been made through third party arrangements.

Under the plan the user buys the computer and pays for it over a five year period. The user is fully committed to the five year plan and cannot get out of his obligation.

However, the rates for the plan are traditionally lower than straight rental rates would be, Belden said, and the user does not lose all of his equity in the system if he upgrades to a higher model in the DECsystem-10 line.

In addition, there are special provisions under the plan for educational and governmental users that allow them to drop out if funding is not renewed for the next year of the plan. This is necessary, Belden said, because many governmental institutions are not allowed to enter into more than one year commitments.

A customer that upgrades to a higher model in the line gets a "high carry forward" from his previous plan, Belden said. And, he noted, the user does not have to change the entire system since many of the upgrades can be made in the field.

Another change for the company will be its entry into the used computer business on a limited scale, Belden said.

He said that DEC will begin to make a market in its own used computers and will help customers sell the systems. The firm will rework the used systems and warranty them. He said that in the past 16 months the firm had helped place 8 PDP-10s that customers were selling in the used market.

Software System Set To Improve Operation Of Data Equipment

NORTHLAKE, Ill. – A software method to improve the operation of data communications systems has been issued a Notice of Allowance by the U.S. Patent Office.

Developed by C. Donald Berteau of Data Communications Systems Specialists (DCSS), the method employs software, data structure, and data encoding to shift formatting and editing functions from a CPU to a remote programmable terminal.

Berteau's method is aimed at developing special software for both terminal and CPU to limit the formatting that is normally required during data transmissions. The method, which remains to be implemented on specific equipment, can save both transmission and CPU time, Berteau told CW. A savings of "25% to 75% in execution time can be expected," he said.

The key to the method apparently centers on simplified editing instructions sent by the CPU to programmable terminals which are receiving data. The simplified instructions make faster CPU processing and shorter transmissions possible, Berteau said.

The method is currently being studied by several equipment manufacturers and software houses, the developer said. DCSS will probably license the new method for use in an independent package or dedicated software designed for a specific system, Berteau said.

But the method could prove useful to large data users who might want to implement it for in-house communications systems, the developer said. DCSS can be reached at Box 2203, 60164.

State Plans to Purchase Replacement for 360/50

WASHINGTON, D.C. – The State Department expects to put out a request for proposal before year-end to acquire equipment to replace two existing IBM 360/50s.

According to an official in the automatic data processing department, State will open the bidding to peripheral manufacturers as well as mainframe producers. The award winner will be responsible for providing all the hardware.

The 360/50s' will be replaced, according to the official, because there is a capacity problem with these large scale machines. Currently about 50 remote terminals in various locations around-the-world are hooked into the machines. The new system will be expected to handle a 150 to 200 terminal load.

Meuleners Named Univac V.P.

BLUE BELL, Pa. – Univac has promoted Albert Meuleners to the position of vice-president for worldwide manufacturing from his post as director of operations at the firm's facility in Roedelheim, Germany.

He joined Univac in 1958 as production engineer on automatic antenna couplers and was named manager of material engineering in 1966 after several other posts. He has directed manufacturing operations in Roedelheim since his appointment there in 1967.

Executive Corner

Other Moves

- Phillip I. Rafield has been elected vice-president for marketing at Digital Computer Controls, Inc. with responsibility for all marketing of the firm's minicomputers and peripheral equipment.
- Ken Winegarner has joined On-Line Business Systems, Inc. as vice-president for the applications systems division.
- Fred G. Warren has joined Systems Engineering Corp. as vice-president of the systems and programming division. He was systems engineering manager at IBM's Richmond, Va., office.
- John M. Coffee has been elected executive vice-president and John Schrock has been named vice-president of finance and administration at Scientific Control Corp.
- Herman A. Affel, Jr., has been appointed president and chief executive officer at Computer Consoles, which also elevated Jeffrey Tai to senior vice-president, and Arthur Russell to vice-president. Former president Edward H. Nutter has resigned but will remain as a consultant to the firm.
- Management Data Corp. has named Bernard J. Greenspan, formerly executive vice-president at Inland Credit Corp., as executive vice-president.
- Arthur Mintz has been appointed general manager at EMR Computer; he was formerly director of marketing.
- R.C. "Dick" Allen has joined Varian Data Machines as director of central systems development.

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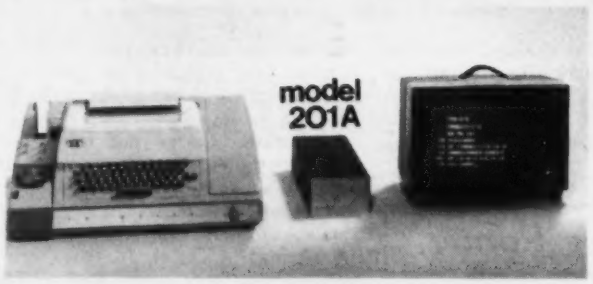

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Westinghouse Sees 2 Min. Turnaround

PHILADELPHIA – In order to gain a "two minute turnaround for most jobs" the Westinghouse Research and Development Center here has installed a Univac 1106 system valued at around $1.4 million.

In addition to supplying a two-minute turnaround for batch jobs, "the new computer will support faster terminals for improved interactive programming and time-sharing, and feature a more powerful capability for Fortran language applications, which will result in significant cost reduction," according to Dr. T.A. Jeeves, manager of computer sciences at the center.

The configuration of the system includes a main memory of 262K words, one drum, four disk units, two mag tape units, a Univac 9300 system, and a data communications subsystem.,

The new order supplements five other large Univac computers used by Westinghouse: two 494 systems and one 490 system used at the firm's tele-computer center in Pittsburgh, and two 1108s used at the company's defense and space center. In addition, Westinghouse uses 20 Univac computers in the 9000 series at various facilities.

Orders and Installations

Nassau County has installed an IBM 370/155, replacing a 360/50 and a 360/40 for a savings of $10,000 per month in rental fees. In addition to the savings, Nassau County said that the new system would allow additional county departments to computerize part of their functions. Nassau is the first governmental agency in New York State to install a 155.

The Fireman's Fund American Insurance Companies have installed an IBM 370/165 with a 3330 disk system, not a 360/65 as incorrectly reported in the Sept. 15 issue.

Four firms have installed core memory units from Computer Investors Group Inc. on IBM 360/40s expanding their capacities to 393K bytes. They are Triangle Publications, South Carolina Electric & Gas, General Data Corp., and Youngstown Sheet and Tube Co. The 393K capacity is 50% greater than the standard offered by IBM.

Redcor has reported two orders for its Keylogic systems. Virginia Blue Shield will use two systems with 23 terminals each for a total of 46 terminals to replace 61 key-to-tape, keypunch and keyverifiers previously used. AT&T has ordered a new system that will be the fifth Keylogic unit in operation at the firm's New York headquarters when installed.

Japan Air Lines has become the 16th air carrier to install data communications equipment from International Communications Corp., a subsidiary of Milgo Electronics Corp. JAL will use the equipment on a trans-Pacific link between Tokyo and San Francisco. It will operate at 2,400 bit/sec over leased lines.

The University of Cincinnati has leased two Model ECM-65 extended core memories from Ampex for use with its 360/65 which is used for general business purposes, and medical and scientific research. Ampex has also landed an order from Los Angeles County, this time for an ECM-50 system used with the IBM 360/50, which services the Air Pollution Control District, County Engineer, Flood Control District, and the Regional Planning Commission.

The Life and Casualty Insurance Co. of Tennessee has purchased an IBM 370/155 to process up to 3.5 million policies per day.

The National Bureau of Standards has installed a DPC 7114 large disk store unit from Data Products Corp. on its Univac 1108. The unit replaces other equipment of the same capacity at a lower cost and with higher speeds, according to Bruce Ramsay, chief of computer services.

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Dicom Announces Two Cassette Drives

SUNNYVALE, Calif. – Dicom Industries, Inc. has introduced two new cassette transports.

The Model 440 Cassette Vacuum Transport (440 CVT) is designed to provide bi-directional incremental-by-character write/read, bi-directional block-synchronous write/read, and high-speed bi-directional search.

Using the proposed ECMA standard for information interchange via cassettes, the maximum data transfer rate is 5,000 eight-bit byte/sec; utilizing dual tracks, the maximum data transfer rate is 10,000 byte/sec.

OEM production deliveries of the Model 440 are scheduled for the second quarter of 1972; the 440 CVT is priced at $400 in OEM quantities.

The Model 171 Cassette Transport Module (171 CTM) is designed for applications such as terminal and data acquisition equipment. The 171 CTM provides bi-directional block-synchronous write/read up to 15 ips, bi-directional high-speed search and fast rewind. It uses proposed ANSI/ECMA standard for information interchange via cassettes, the maximum data transfer rate is 1,500 eight-bit byte/sec.

OEM production deliveries of the Model 171 Cassette Transport Module are scheduled for the last quarter of 1971; the 171 CTM is priced at $150 in OEM quantities, the firm is at 715 N. Pastoria Ave., 94086.

Dual Disk Drive Added to Diablo Line

HAYWARD, Calif. – Diablo Systems, Inc. has announced a dual disk drive, Model 33. The unit consists of two completely independent drives. One is the Diablo Model 31 with replaceable disk, the second is designated Model 33F and has a fixed disk.

The Model 33F is a basic Model 31 equipped with a fixed rather than a removable disk. Both drives operate independently, and head positioning can be overlapped. Average head positioning time is less than 70 msec on each drive. Storage capacity for the Model 33 is 48M bits.

Prices range from $5,820 to under $3,500 for OEM quantities. The firm is at 24500 Industrial Blvd., 94545.

Dual-Format Synchronous Recorder Bows at Kennedy

ALTADENA, Calif. – Kennedy Co. is marketing the Model 8700 series, a 7 in.-reel synchronous tape transport for use with System 8000, a dual-format 800/1600 cpi tape system.

New OEM Products

The Series 8700 both reads and writes IBM-compatible tape in either 7-track 200, 556 or 800 BPI or 9-track 800 cpi NRZI and 1600 cpi phase-encoded formats. The Series 8700 is capable of generating the check characters, gaps and parity required for both NRZI and phase-encoded formats when used with the Model 8208 and 8216 Format Control Units.

Data transfer rates run up to 30 KHz. Price of Series 8700 is less than $1,900, in quantities, from the firm at 540 W. Woodbury Rd., 91001.

Datapac Debuts ROMs

COSTA MESA, Calif. – Datapac has developed a line of standard off-the-shelf ROMs. Bit capacities range from 8K to over 200K per system.

A variety of basic word/bit configurations are available such as 256x16, 256x36, 512x16, 1Kx9, 256x64, 1Kx16, 2Kx18, 2Kx20, and 4Kx48.

Many of the basic configurations can be altered to give additional formats by changing the input code and drive matrix circuitry. Speed ranges of 50 to 300 nsec access times are available. Power requirements are less than 0.08 mW per bit.

The new line will be priced from 2 cents to 0.8 cents per bit depending on speed, capacity and quantity. Deliver is 2 to 15 days after receipt of data contents from customer. The company is at 3180 Redhill Ave., 92627.

CEM Announces Low Cost Rotating Drum Memory

TORRANCE, Calif. – California Electro Mechanisms has announced a new series of rotating drum memories designed for mini-computer, terminal and process control computer applications.

Called the DR6E series, the drums feature: pre-aligned aerodynamic heads; lapped ceramic head faces, independent head shielding, and head per track construction.

The firm is at 22519 S. Normandie Ave., 90501.

Disk Pack Heads Available in Ramp Load Version

GOLETA, Calif. – Applied Magnetics Corp. has announced a line of disk pack magnetic heads in a ramp load configuration in addition to the previously available torsion arm load configuration.

Included are the 1100 bpi disk pack heads (100 track/in., 2200 bpi heads (100 track/in.) and the double track density 2200 bpi heads (200 track/in.).

Applied Magnetics is at 75 Robin Hill Rd., 93017.

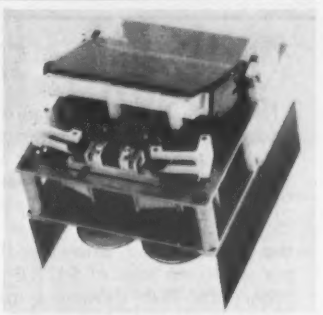
Heavy Duty Perforator Announced by Tally

KENT, Wash. – A tape perforator designed to punch exotic tape materials has been developed by Tally Corp.

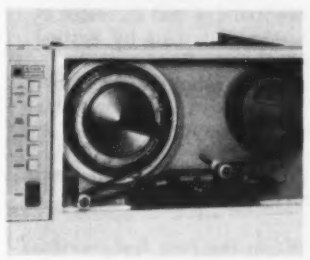
Known as the Model P-1200, the 120 char./sec unit uses specially designed punch pins that are said to extend mechanism life by reducing the force necessary to perforate heavy duty tape materials. Features of the new perforator include asynchronous operation and 5- through 8 level operation. Error checking is available on an option.

Price of the P-1200 is $1,500 with quantity discounts available from Tally at 8301 180th St., 98031.

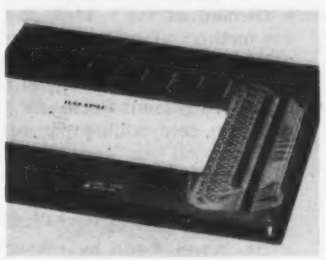
Diablo Dual Disk System



Dicom 171 Cassette Module



Kennedy Tape Transport



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This new work presents the powerful programming language applied to a wide variety of numerical and non-numerical problems. 1971, 144 pp.

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Sanders Slips Further

NASHUA, N.H. – The bad news reported by Sanders Associates, Inc. at the 11 month mark in the past fiscal year, [CW, July 28] got worse in the last month of the year.

At the same time the firm has revamped its operations.

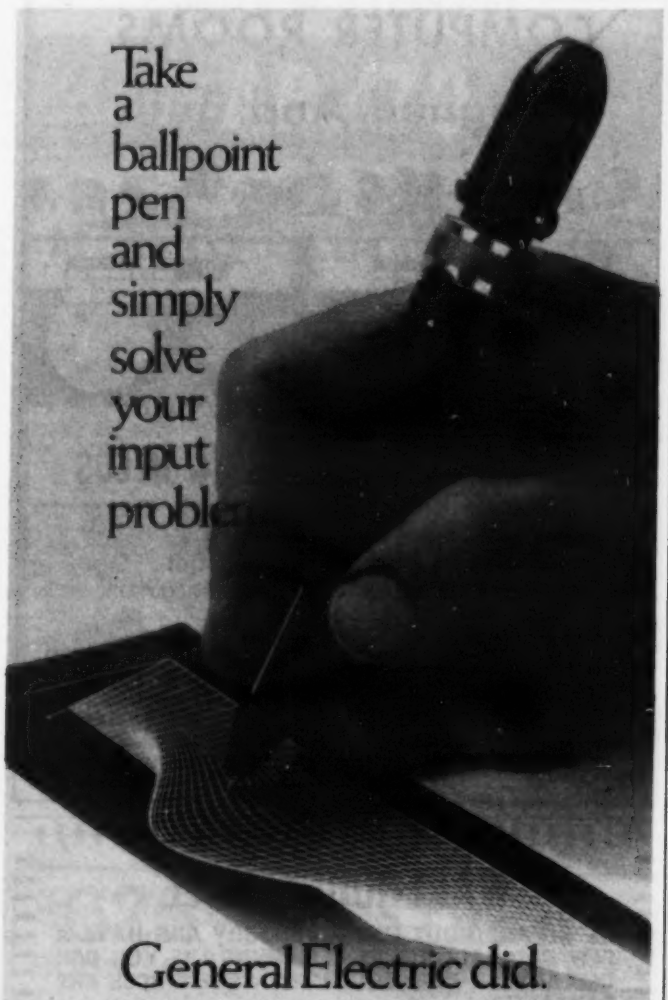
For the full year ended July 31 the firm lost $24.6 million ($5.39 per share) on revenues of $146.4 million, compared to the previous year when the firm earned $782,000 (72 cents per share) on sales of $173.6 million. In the special 11 month report the firm showed a loss of $23.6 million ($5.18 per share) on sales of $133.7 million.

The loss reflects the unrecovered costs resulting from settlement of the F-11/ALQ-94 negotiations and a change in the method of accounting for development costs by writing off deferred costs and expensing future costs, Sanders said.

Commercial operations will reach the threshold of profitability in the present fiscal year (1972), Royden C. Sanders, Jr., president, said, adding that market reception for the new "Can Do" terminal was "very encouraging."

In the new restructuring, all of the firm's divisions have been integrated into three Groups: Federal Systems, Sanders Data Systems, and Component Products.

The moves made by management in the past few months "will produce profitable results in fiscal 1972 and further earnings gains in the years ahead," Sanders predicted.



General Electric did.

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SDC Turns a Profit for the Year

SANTA MONICA, Calif. – System Development Corporation (SDC) has reported net income of $131,000 and sales of $45.3 million for the fiscal year which ended June 27, 1971.

This compares to a loss of $553,000 on sales of $55.6 million for fiscal 1970.

According to Chairman and President George E. Mueller, the increased earnings were materially influenced by a tax loss carryforward. Other factors contributing to the increase were reduced administrative, research and development costs.

Although total sales declined 19%, Dr. Mueller noted the Public Systems and Commercial Systems Divisions grew 19- and 11% respectively. These advances, however, could not offset a 25% decline in military sales.

During the past year, SDC's wholly owned subsidiary Integrated Systems Support, Inc. (ISSI), began operation, winning a major contract from the Navy's Fleet Computer Programming Center, Atlantic. The contract has a three-year potential value of $8 million.

SDC transferred its operations from a non-profit to a for-profit corporation July 1, 1969. A majority of the firm's common stock is held by the System Development Foundation, a non-profit trust.

Comress Works Out Japanese Lease

By CW Washington Bureau

WASHINGTON, D.C. – The U.S. Government, an American company and a Japanese management consulting organization have expressed their happiness with an agreement to have a U.S. computer software program imported into Japan for domestic marketing for the first time.

The agreement, reached after nearly two years of negotiations, is between Comress Inc. of suburban Rockville, Md., and the Japan Management Association (JMA) which received the official blessing of the Japanese Government's Ministry of International Trade and Industry (Miti) to close the deal.

The three-year franchise agreement (JMA will lease the program to major Japanese computer users) is for Systems and Computers Evaluation Review and Technique (Scert).

Comress, JMA, and Miti agree that Scert and its use will be viewed as a test case for the importing of other software products into Japan.

No dollar figure on the deal was given, although Comress admitted that based on royalty arrangements the U.S. company could realize over $1 million.

Contracts

Compudata Inc. will act as sales representative in Florida for Boeing Computer Services under a new pact.

Management and Computer Services Inc. will supply a personnel filing system to Penn Central Transportation Co. under a recent agreement.

Information Displays Inc. has received an order for an Idiiom graphic display from Aircraft Armaments Inc., which will use the system in an EA6B attack aircraft tactics trainer. The firm also received a contract from the Army Materials Command for an Idiiom unit.

EG&G has won a $155,000 pact from the U.S. Geological Survey for the design of a density manipulation system.

Western Michigan University has contracted with Systems & Computer Technology Corp. for a registration and student scheduling system.

The National Oceanic and Atmospheric Administration (NCAA), U.S. Department of Commerce, has selected Information International, Inc., as the result of a competitive procurement, to provide a computer output microfilm system for its facility at Suitland, Md. The contract for the FR 80 COM system is an annual lease with a monthly rental of $8,540.

Computer Sciences Corp. has been selected by Nasa to provide mathematical, analytical and operational support to Goddard Institute for Space Studies in New York City. Negotiations are expected to lead to a two-year contract valued at approximately $2.2-million, with an additional one-year option.

Nickels and Dimes

The management of **University Computing Company** and of its 71%-owned facilities management subsidiary, **Computer Technology Inc.**, have agreed in principle to merge in a tax-free transaction.

$$$

Computer Optics Inc., which until recently faced bankruptcy, is re-entering the highly competitive computer terminal marketplace with new financial backing. A Chapter XI Plan of Arrangement with the company's unsecured creditors has been accepted and confirmed, according to the firm.

$$$

General Computer Systems, Inc., Dallas-based manufacturers of data input systems, has made a private placement with Schroder Capital Corp. of $300,000 in convertible notes. Schroder has agreed to serve in the capacity of financial adviser to GCS in the future. GCS plans to privately place an additional $300,000 following its annual shareholders meeting scheduled for mid-October.

$$$

Boothe Computer Corp. has established a financial subsidiary, Boothe Credit Corp. to finance leasing of products of Boothe Computer subsidiaries. Stephen Schaub will be president.

$$$

A new entry, in the business, reports that expansion into the small computer area is going better than expected. **Eldorado Electrodata Corp.** said that its introduction of its mini systems will have a strong influence in future earning power.

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TELETYPE model 37, KSR, 15 cps	1,500
OMNITEC COUPLER model 702	200
OMNITEC COUPLER model 701A	110
OMNITEC COUPLER model 700A	90
DIGITAL TECHNIQUES TELETYPE COUPLER	100
OMNITEC COUPLER model 723	130

These units have been used but carry an unconditional warranty. Equipment availability subject to prior sale.

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Computerworld Stock Trading Summary

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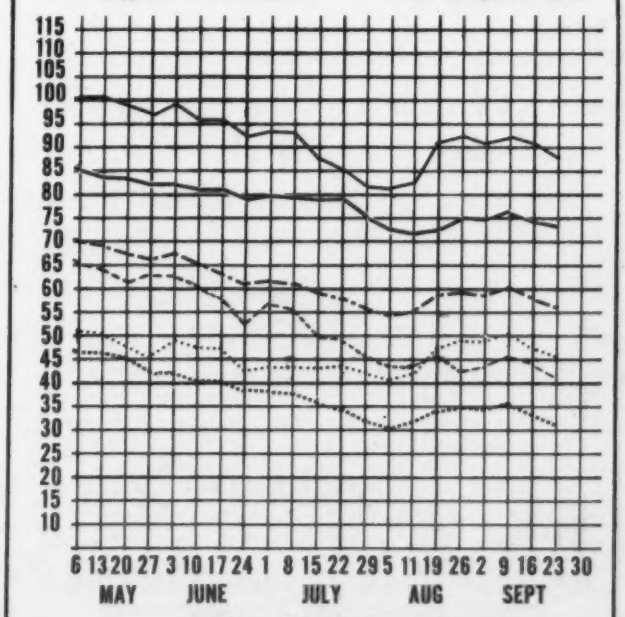
EXCH		1971 RANGE (1)	CLOSE SEP 23 1971	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 4	1 1/4	- 1/4	-16.6
A	APPLIED DATA RES.	5- 13	7	+ 1/8	+1.8
O	APPLIED LOGIC	1- 3	1/2	0	0.0
O	ARIES	1- 2	1	+ 1/8	+14.2
N	AUTOMATIC DATA PROC	44- 65	62	+2 1/2	+4.2
O	AUTO SCIENCES	3- 8	2 3/4	- 1/8	-4.3
O	BOOTHE DATA SYS	1- 2	1 1/2	- 1/4	-14.2
O	BRANDON APPLIED SYS	1- 1	1/4	0	0.0
O	COMPUTER ENVIRON	1- 2	1/2	0	0.0
O	COMPUTER NETWORK	2- 11	4	- 1/2	-11.1
O	COMPUTER PROPERTY	5- 11	5 3/4	+ 3/4	+15.0
N	COMPUTER SCIENCES	9- 17	8 1/2	- 1/8	-1.4
O	COMPUTER TASK GROUP	1- 3	1 5/8	+ 1/8	+8.3
O	COMPUTER USAGE	5- 16	7 1/2	- 1/8	-1.6
O	COMP AUTOMOT REPORTS	6- 13	8 3/4	- 1/4	-2.7
N	COMPUTING & SOFTWARE	24- 45	25 1/8	-2	-7.3
O	COMRESS	2- 4	1 7/8	- 1/4	-11.7
O	COMSHARE	4- 8	4	0	0.0
O	CONSOL. ANAL. CENT.	1- 2	3/4	0	0.0
O	DATA AUTOMATION	1- 4	1 1/4	- 1/8	-9.0
O	DATA PACKAGING	6- 10	7 3/4	- 3/8	-4.6
O	DATAMATION SERVICE	1- 3	7/8	0	0.0
L	DATATAB	4- 10	7	0	0.0
O	DIGITEK	1- 4	1 3/4	- 1/2	-22.2
O	EDP RESOURCES	7- 16	7 3/4	- 1/4	-3.1
A	ELECT COMP PROG	3- 7	2 1/2	- 1/2	-16.6
N	ELECTRONIC DATA SYS.	53- 85	57 1/8	-2 7/8	-4.7
O	INFORMATICS	7- 15	8 7/8	- 1/4	-2.7
A	ITEL	10- 23	10 3/8	-1 1/8	-9.7
O	KEANE ASSOCIATES	4- 14	3 1/2	- 3/4	-17.6
O	KEYDATA CORP	8- 14	7 1/2	- 3/8	-4.7
A	MANAGEMENT DATA	7- 11	8	+ 1/4	+3.2
O	NATIONAL CSS INC	7- 14	8 3/4	- 1/2	-5.4
O	NAT COMP ANALYSTS	1- 4	1 1/8	- 1/2	-30.7
O	NAT.COMP. SERV.	1- 4	3/4	0	0.0
N	PLANNING RESEARCH	16- 26	16 3/8	- 1/4	-1.5
O	PROGRAMMING METHODS	18- 29	19	- 1/2	-2.5
O	PROGRAMMING & SYS	2- 4	1 7/8	0	0.0
L	PROGRAMMING SCIENCES	1- 3	1/8	- 1/8	-50.0
O	SCIENTIFIC COMPUTERS	2- 3	2 7/8	+ 1/8	+4.5
O	SCIENTIFIC RESOURCES	1- 2	3/8	0	0.0
O	SOFTWARE SYSTEMS	1- 3	1 3/4	- 1/4	-12.5
O	TBS COMPUTER CENTERS	4- 9	5 1/4	- 1/2	-8.6
O	TOLLEY INTL CORP	3- 8	6 7/8	- 1/4	-3.5
O	UNITED DATA CENTER	2- 7	3 3/4	+ 1/8	+3.4
N	UNIVERSITY COMPUTING	21- 38	24 1/8	-2 1/8	-8.0
A	URS SYSTEMS	6- 11	5 3/4	-1 1/8	-16.3
O	U.S. TIME SHARING	1- 3	3/4	0	0.0
O	VORTEX CORP	2- 5	5 1/2	+ 1/4	+4.7
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	24- 48	37	+ 1/8	+0.3
O	ALPHANUMERIC	2- 6	2	- 3/8	-15.7
N	AMPEX CORP	14- 25	15 1/4	- 3/4	-4.6
O	ASTRODATA	1- 2	2 1/8	+ 1/2	+30.7
O	ATLANTIC TECHNOLOGY	3- 8	4 3/8	+ 5/8	+16.6
A	BOLT,BERANEK & NEW	5- 8	5 3/4	0	0.0
N	BUNKER-RAMO	8- 17	8 1/8	-2	-19.7
A	CALCOMP	18- 33	17 5/8	-1 5/8	-8.4
O	COGNITRONICS	3- 9	3 3/4	+ 1/8	+3.4
O	COLORADO INSTRUMENTS	2- 8	2 1/4	- 5/8	-21.7
O	COMPUTER COMMUN.	6- 19	6 3/8	- 1/8	-1.9
A	COMPUTER EQUIPMENT	4- 7	3 1/2	- 1/4	-6.6
A	COMPUTEST	8- 20	7 7/8	- 1/4	-3.0
O	CONSOL COMPUTER LTD.	3- 12	3 1/4	+ 1/4	+8.3
A	DATA PRODUCTS CORP	5- 10	5 1/4	- 1/4	-4.5
O	DATA TECHNOLOGY	3- 9	4 1/2	+ 1/2	+12.5
O	DIGITRONICS	4- 8	3 3/4	- 3/8	-9.0
N	ELECTRONIC M & M	8- 16	9 3/8	- 1/2	-5.0
O	FABRI-TEK	2- 4	3	+ 1/8	+4.3
O	FARRINGTON MFG	1- 3	1/8	0	0.0
O	FOTO-MEM INC	1- 6	5/8	- 1/8	-16.6
O	INFOREX INC	23- 49	22 1/2	-3 1/2	-13.4
O	INFORMATION DISPLAYS	5- 8	5	- 1/4	-4.7
O	MANAGEMENT ASSIST	1- 2	7/8	- 1/8	-12.5
A	MARSHALL INDUSTRIES	13- 27	13 1/4	- 3/4	-5.3
A	MILGO ELECTRONICS	13- 26	12 3/4	-1 1/2	-10.5
N	MOHAWK DATA SCI	22- 47	23 1/4	-1 5/8	-6.5
O	ON LINE SYSTEMS INC	7- 18	9 1/2	- 1/2	-5.0
O	OPTICAL SCANNING	9- 18	8 5/8	-1 3/4	-16.8
O	PHOTON	7- 12	8 1/4	- 1/2	-5.7
O	PHOTO-MAGNETIC SYS.	1- 6	2	0	0.0
A	POTTER INSTRUMENT	13- 25	14 3/4	- 1/2	-3.2
O	PRECISION INST.	7- 16	10	-1 1/2	-13.0
O	RECOGNITION EQUIP	12- 26	15	-1 1/8	-6.9
O	REDCOR CORP.	3- 9	3	-1	-25.0
N	SANDERS ASSOCIATES	11- 22	10 1/2	- 3/8	-3.4
O	SCAN DATA	6- 15	11 7/8	- 3/4	-5.9
O	TALLY CORP.	8- 16	11 3/4	- 3/8	-3.0
N	TELEX	13- 22	13 3/4	- 7/8	-5.9
O	VIATRON	1- 4	1/4	+ 1/8	+100.0
	SUPPLIES & ACCESSORIES				
N	ADAMS-MILLIS CORP	12- 19	12 1/4	- 3/8	-2.9
O	BALTIMORE BUS FORMS	6- 10	7 3/4	0	0.0
A	BARRY WRIGHT	8- 13	7 1/2	- 1/4	-3.2
A	DATA DOCUMENTS	16- 29	16 1/4	-1	-5.7
O	DUPLEX PRODUCTS INC	8- 10	10	- 1/8	-1.2
N	ENNIS BUS. FORMS	6- 13	7 1/4	0	0.0
O	GRAHAM MAGNETICS	9- 35	20 1/2	0	0.0
O	GRAPHIC CONTROLS	6- 15	13 7/8	+ 3/4	+5.7
N	MEMOREX	27- 78	33 3/4	-1 3/4	-4.9
N	3M COMPANY	96-123	120 5/8	+ 1/4	+0.2
O	MOORE BUS. FORMS	36- 42	38 3/8	- 3/8	-0.9
N	NASHUA CORP	29- 47	42 3/4	-3	-6.5
O	REYNOLDS & REYNOLD	37- 63	60 1/2	- 1/2	-0.8
O	STANDARD REGISTER	18- 23	17 3/4	-1 5/8	-8.3
O	TAB PRODUCTS CO	8- 17	12 3/4	+1 3/4	+15.9
N	UARCO	25- 34	25 1/2	- 3/8	-1.4
A	WABASH MAGNETICS	6- 10	6 1/4	+ 1/8	+2.0
N	WALLACE BUS FORMS	18- 26	22 1/8	+ 3/4	+3.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	105-140	130 3/4	+ 3/4	+0.5
N	COLLINS RADIO	12- 20	13	-1 5/8	-11.1
N	CONTROL DATA CORP	48- 83	52 5/8	-5 5/8	-9.6
O	DATA GENERAL CORP	19- 65	57 1/2	-6 1/2	-10.1
N	DIGITAL EQUIPMENT	53- 85	76 3/8	-4 1/8	-5.1
N	ELECTRONIC ASSOC.	5- 9	5 7/8	- 1/8	-2.0
A	ELECTRONIC ENGINEER.	5- 10	9 1/4	+ 1/8	+1.3
N	FOXBORO	25- 46	41 1/2	-1 3/8	-3.2
O	GENERAL AUTOMATION	9- 26	13 3/4	+ 3/4	+5.7
N	GENERAL ELECTRIC	53-124	62 1/8	-1	-1.5
N	HEWLETT-PACKARD CO	30- 45	42 3/4	+2 1/8	+5.2
N	HONEYWELL INC	83-115	106 1/4	-3 1/2	-3.1
N	IBM	284-364	305	+4	+1.3
O	INTERDATA INC	6- 11	9 1/4	- 1/8	-1.3
N	NCR	37- 49	37 1/4	-3 7/8	-9.4
N	RCA	26- 41	36 3/4	+4 3/8	+13.5
N	RAYTHEON CO	27- 46	36 1/2	-1 3/8	-3.6
O	SCI. CONTROL CORP.	1- 2	5/8	0	0.0
N	SPERRY RAND	25- 38	29 3/8	-1	-3.2
A	SYSTEMS ENG. LABS	8- 18	8 1/4	0	0.0
N	VARIAN ASSOCIATES	13- 18	14 1/2	- 5/8	-4.1
N	VICTOR COMPTOMETER	14- 27	16 3/4	+ 3/8	+2.2
N	WANG LABS.	29- 50	45 1/4	-1 3/4	-3.7
N	XEROX CORP	85-121	116	- 3/8	-0.3
	LEASING COMPANIES				
A	BOOTHE COMPUTER	13- 27	16 1/8	- 5/8	-3.7
O	BRESNAHAN COMP.	2- 4	2 1/4	- 1/2	-18.1
O	COMPUTER EXCHANGE	3- 9	3 1/2	+ 1/2	+16.6
A	COMPUTER INVSTRS GRP	8- 14	11	- 1/2	-4.3
N	DATA PROC. F & G	11- 19	12 3/8	-1 1/4	-9.1
O	DATRONIC RENTAL	2- 4	2 5/8	+ 1/4	+10.5
A	DCL INC	5- 13	8 1/4	- 1/8	-1.4
A	DEARBORN-STORM	24- 44	38 1/8	-1 1/4	-3.1
A	DPA, INC.	4- 9	8 3/8	0	0.0
A	GRANITE MGT	7- 13	8 5/8	- 5/8	-6.7
A	GREYHOUND COMPUTER	7- 11	7 3/4	- 3/4	-8.8
N	LEASCO CORP	16- 26	23	- 1/4	-1.0
O	LECTRO MGT INC	2- 5	3 1/4	0	0.0
O	LMC DATA, INC.	1- 1	1	0	0.0
O	NCC INDUSTRIES	3- 8	6 3/4	0	0.0
A	ROCKWOOD COMPUTER	4- 9	4	- 1/4	-5.8
O	SYSTEMS CAPITAL	3- 7	4 1/2	- 5/8	-12.1
N	U.S. LEASING	16- 39	35 1/4	-2 1/4	-6.0

EXCH: N=N W YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVE -THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 G.M. OR LAST BID
gg(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



BASE FOR EACH TRADING INDEX: 100 as of 3/1/68

Earnings Reports

INFORMATION DISPLAYS
Six Months Ended June 30

	1971	1970
Revenue	$602,831	$745,753
Spec Chg	.....	547,753
Loss	177,477	745,465

COMPUTER TECHNOLOGY
Three Months Ended June 27

	1971	1970
Shr Ernd	$.07	.....
Revenue	8,418,000	9,415,000
Earnings (Loss)	393,000	(3,441,000)
6 Mo Shr	b.13	.....
Revenue	17,521,000	19,102,000
Tax Cred	192,000	.....
Earnings (Loss)	c938,000	(4,108,000)

a-Restated. b-Based on income before tax credit. c-Equal to 17 cents a share.

UNIVERSITY COMPUTING
Three Months Ended June 30

	1971	1970
bShr Ernd	$.22	$.04
Revenue	32,390,000	26,665,000
Earnings	1,645,000	302,000
b6 Mo Shr	.42	e.50
Revenue	66,474,000	55,876,000
Spec Chg	.....	d4,119,000
Earnings (Loss)	3,185,000	(635,000)

a-Restated by company. b-Based on common and common equivalent shares. d-Cumulative effect on prior years of accounting change. e-Based on income before special charge.

FAIM INFORMATION SERVICES
Six Months Ended May 31

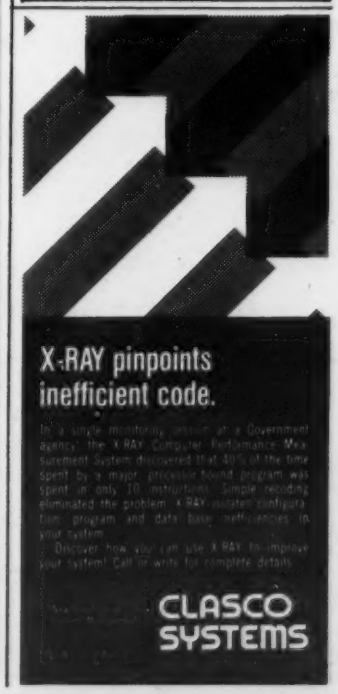
	1971	1970
Shr Ernd	a$.07	$.06
Spec Chg	b97,015	.....
Earnings (Loss)	(35,009)	56,625

a-Based on income before special charge. b-Consists of a $120,000 provision for loss on disposition of investment on United Systems, Inc., a $22,337 loss on sale of information Spectrum Inc. and a $45,322 tax benefit from utilization of net operating loss carryforward.

SYSTEM/3

- SYSTEMS DESIGN
- PROGRAMMING
- DOCUMENTATION
- IMPLEMENTATION
- FIXED COST CONTRACTS

BASIC SYSTEMS FUNCTIONS, INC.
485 FIFTH AVE.
SUITE 1042
NEW YORK, N.Y. 10017
212 — 986-2900


X-RAY pinpoints inefficient code.
In a single monitoring session at a Government agency, the X-RAY Computer Performance Measurement System discovered that 30% of the time spent by a major processor bound program was spent in only 10 instructions. Simple recoding eliminated the problem. X-RAY isolates configuration, program and data base inefficiencies in your system.
Discover how you can use X-RAY to improve your system! Call or write for complete details.
CLASCO SYSTEMS

If You Use DOS
You Should Know All About GRASP.

Today there are over 300 DOS Users renting GRASP, from 48K 360/25's to 512K 50's.

It all started in England in 1968 when a programmer for Software Design Ltd. combined the concept of spooling – increased throughput – with the advantages of buffering – very modest requirements of core and disk. Since it was to be a "for-sale" program, it also had to be very easy to install and use . . .

If you don't spool ———

it is well worth considering. It will consistently increase System Availability 15 to 35%. This can mean reduced overtime for both staff and equipment, or it can mean the avoidance of purchasing more hardware to get more work done. With GRASP, you can be spooling effectively on 20 cylinders of 2311 and 4K of core, with no changes to existing programs or procedures, within 15 minutes of installation.

If you use POWER ———

GRASP will do everything POWER does and then some (see below) in less than ½ the core, ¼ the disk space. Benchmarks in which GRASP is made to look like POWER (don't let it look like GRASP – turn off the printer) will prove GRASP to be at least 10% faster than POWER. Over 150 former POWER installations now use GRASP.

GRASP

If you're going to OS ———

Even if you only postpone your transition to OS, you may find considerable savings in renting GRASP/II for the interim. The following capabilities of DOS-GRASP/II make it an attractive alternative to OS:

i) F0: GRASP/II runs in a totally independent F0 partition. Three Batch partitions are available for User processing.

ii) Load Libraries: All DOS programs (except MAINT) become self-relocating, executable in any partition. This includes IBM compilers, service programs, and User programs regardless of source language or overlay structure.

iii) Dynamic Partition Balancing: GRASP/II continuously monitors the relative CPU usage of all partitions and will adjust the DOS priorities for maximum throughput. This will also prevent the shutting out of lower priority partitions in cases where a higher priority partition is substantially CPU bound.

Communications ?

The recently released GRASP/II Remote Terminal Systems makes communications to a variety of remote terminals completely transparent to the system.

The following devices are supported as remote terminals:

IBM 2770, IBM 2780, DATA 100, IBM 360/20,
IBM System/3, IBM 1130, IBM 360 Model 25 and upwards,
IBM 370 Model 135 and upwards, PDP 11

Inter-CPU facilities permit not only inter-DOS communications but also OS-DOS connection.

In addition to RJE support for EBCDIC, GRASP also permits 6-bit transmission providing the benefits of faster transmission on either private or dial-up lines.

For further information, write or call:

Software Design, Inc.
999 No. Sepulveda Blvd.
El Segundo, Calif. 90245
(213) 322-8540

In Canada:
Comserv, Ltd.
2400 Eglinton Ave.
W. Toronto 15
(416) 653-2313

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